

Furbearer Management Report of survey-inventory activities 1 July 1997–30 June 2000

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Alaska Department of Fish and Game
Division of Wildlife Conservation
December 2001



ADF&G

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Funded in part through Federal Aid in Wildlife Restoration, Proj. 7, Grants W-27-1, W-27-2 and W-27-3.

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi²)

GEOGRAPHIC DESCRIPTION: Prince William Sound and north Gulf Coast

BACKGROUND

Beavers, coyotes, red foxes, lynx, marten, mink, muskrats, land otters and wolverines are all present in Unit 6. Density of individual species is variable, depending upon a variety of ecological factors and levels of harvest. Historical information on population status and trend is mostly anecdotal. We monitored harvests of beavers, lynx, land otters and wolverines by sealing.

Beavers are abundant in Units 6A, 6B and 6C, where the deltas of the Copper and Bering Rivers and other freshwater streams provide suitable habitat. Density is lower in Unit 6D, Prince William Sound (PWS), where less habitat is available. Heller (1910) reported beavers in the Rude River drainage of eastern PWS, but he apparently did not find them on islands in PWS. J. Reynolds (ADF&G files 1976) documented occurrence on Hawkins and Hinchinbrook Islands, Simpson Bay, Rude River and Gravina River.

We have sealed beaver hides to monitor harvest since 1927 (Courtright 1968). Most of the take was from the Copper and Bering River deltas where total harvest has fluctuated widely. In 1938, C. Rhode (ADF&G files) reported a harvest of 700 from the deltas. By 1951, it declined to a low of 27, and then increased again to more than 300 in 1960 and 1963 (Griese 1990).

Coyotes are comparatively new arrivals in Unit 6. Heller (1910) did not note their presence in 1908, and F. Robards (ADF&G files) suggested they became established as a dominant canid in 1938. However, recent observations by trappers and ADF&G personnel suggest coyotes have declined in eastern Unit 6, while wolves have increased.

Red foxes are scarce in Unit 6. They were common in the early 1900s but may have been displaced as coyote populations increased (Griese 1990). The last significant harvest of foxes was reported in 1972 in Unit 6C (Griese 1988b).

Lynx are also scarce in Unit 6, with few sightings in recent years. O. Koppen (ADF&G files) indicated in 1949 that numbers had always been low. Characteristics of the harvest suggest that Unit 6 may serve as a low-density refugia for lynx when populations decline in adjacent units

(Griese 1988b). Harvest between 1969 and 1990 was less than 3 animals, it did not include juveniles, and harvest coincided with population crashes in adjacent populations.

Density of marten is quite variable. In 1949, O. Koppen (ADF&G files) characterized populations as scattered. He believed that the highest density occurred between Cape Suckling and Cape Yakataga. He suggested that PWS and deltas of the Copper and Bering Rivers were frequently subjected to excessive trapping, resulting in low numbers. Populations in the 1980s increased, except in heavily trapped areas near Valdez and Cordova (Griese 1988b).

Mink are common in most of Unit 6. Observations made between 1931 and 1955 (ADF&G files) suggested a potential for high numbers that may not have been realized because of periodic overharvest. Trapping effort declined during the 1980s because of low pelt prices, consequently mink numbers increased throughout the unit (L. Kritchen, pers. comm.). However, this increase may have been slowed or reversed in 1989 in western PWS because of mortality caused by the *Exxon Valdez* oil spill.

Muskrats are found in Unit 6 east of PWS. Heller (1910) did not report muskrats in PWS in 1908, and J. Reynolds (ADF&G files) confirmed their absence in 1976. On the Copper River Delta, muskrats were plentiful during the 1930s (G. Nelson, ADF&G files); however by 1935 icing and overflows had reduced numbers. O. Koppen (ADF&G files) also reported depressed numbers in 1948 due to predation. By 1955, the Copper River Delta population had recovered (F. Robards, ADF&G files), and recovery has persisted since (Griese 1988a).

Land otters are common in most of Unit 6. Heller (1910) reported that land otters were the most common carnivores in PWS in 1908. However, trapping and hunting with dogs reduced them to low levels during the early 1930s (G. Nelson, ADF&G files). The population recovered during the 1940s (O. Koppen, ADF&G files) and became plentiful throughout the unit by 1951 (F. Robards, ADF&G files). The *Exxon Valdez* oil spill in 1989 caused significant mortality in western PWS. However, land otters were reported as recovered by the *Exxon Valdez* Oil Spill Trustee Council in 1999.

Wolverines are present in most of the unit. In the late 1930s, they were plentiful and considered a nuisance (G. Nelson, ADF&G files). Bounties were placed on wolverines in 1954 that resulted in "undue" harvest pressure on the population, increasing the take 5-fold (F. Robards, ADF&G files). The bounty was removed in 1959. Harvest peaked between 1972 and 1978 because of greater numbers of wolverines and increased trapper access and effort (Griese 1988b).

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

The management goal is to provide optimum harvests and maximum opportunities to participate in the hunting and trapping of furbearers (Rausch 1977). Management objectives have not been established.

METHODS

We sealed hides of beavers, land otters, lynx, and wolverines taken by trappers and hunters. Sealing of marten began in 1999. We recorded location and date of harvest, method of take, and type of transportation for all species. Sex was recorded for otters, martin and wolverines, and we measured length and width of beavers, lynx and otters. We also sent questionnaires to trappers to obtain information on relative abundance and trends in furbearer populations.

Preliminary work began on a land otter habitat assessment and monitoring project during June 2000. We searched (by skiff) coastline in eastern PWS for latrine sites actively used by otters.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beavers were abundant during this reporting period in Units 6A, 6B, and 6C, particularly on the deltas of the Copper and Bering Rivers. On the Copper River Delta in Unit 6C, the population was high and stable. Cache surveys in 1988 and 1990 indicated 2400 and 3100 animals, respectively (Nowlin 1993). Beavers are increasing in abundance on eastern Hinchinbrook Island.

Coyotes were abundant and most populations were stable. Griese (1990) estimated density at 0.1-1.0/mi² in suitable habitat. A possible exception was in eastern Unit 6 where they may have declined because of displacement by an increasing wolf population.

Red foxes and lynx were scarce and did not show signs of increasing during the reporting period. Most trappers reported that marten numbers had increased during 1998–99 and remained high through the following year. Mink and land otters were both common, with stable numbers in most of Unit 6. Muskrats were at low density and were stable. Wolverines were present at low to moderate density and were stable.

MORTALITY

Harvest

Seasons and Bag Limits. The beaver trapping season during 1997–98 through 1998–99 was 1 December to 31 March, and the bag limit was 20 beavers per season. During 1999–00 the season was 1 December–30 April with no bag limit.

The coyote trapping season in that portion Unit 6C south of the Copper River Highway and east of the Heney Range was 10 November to 30 April. The trapping season in the remainder of Unit 6 was 10 November–31 March. Trappers did not have a bag limit for coyotes. The coyote hunting season was 1 September–30 April and the bag limit was 2 coyotes.

The red fox trapping season was 10 November–28 February and there was no bag limit. There was no hunting season for red fox.

The wolverine trapping season was 10 November–28 February, and there was no bag limit. The wolverine hunting season was 1 September–31 March, and the bag limit was 1 wolverine.

The lynx trapping season was 1 January–15 February during the reporting period, with no bag limit. The hunting season for lynx was closed during the entire reporting period.

The trapping season for marten, mink, and weasels during the reporting period was 10 November–31 January, with no bag limit, except that marten season was 10 November–28 February during 1999–00. Muskrat trapping season was 10 November–10 June, and there was no bag limit. Land otter trapping season was 10 November–31 March, with no bag limit.

Board of Game Actions and Emergency Orders. We regulated the lynx trapping season each year by emergency order as part of our tracking harvest strategy. Emergency orders were issued to modify season lengths as lynx and prey populations varied, to ensure sustainable harvest.

The Board adopted proposals by the local advisory committee to extend beaver and marten seasons by 1 month beginning in 1999–00.

Trapper Harvest. Beaver harvest ranged from a low of 33 during 1998–99 when heavy snow limited access to beavers, to a high of 108 during 1999–00 (Table 1). Traps or snares were the normal method of take, and the proportion of juveniles in the harvest varied. As in past years, 90–100% of the harvest came from Unit 6C.

The only reported lynx harvest was 1 taken during January 1997 near Icy Bay and 1 near Cape Yakataga during 1999.

Land otter harvest ranged from 36–76 during this reporting period (Table 2). A high proportion of females (62%) were taken during 1998–99, but harvest returned to a normal level during 1999–00. Most otters were taken using traps or snares but an unusually high number were shot during 1997–98.

Wolverine harvest was 10–21 (Table 3). Most wolverines were trapped or snared. This was the pattern over the past 5 years.

Marten harvest during 1999–00 (the first year that sealing was required) was 198 (30% females). I expect that this harvest will be high compared to subsequent years because trappers reported an unusual abundance of marten during 1998–99 and 1999–00. Fur acquisition and export reports indicate a harvest of 40–80 marten per year.

Harvest Chronology. Peak beaver harvest varied during the reporting period (Table 4), depending primarily on ice and snow conditions that allow access to beavers. The maritime climate causes annual variation in timing and endurance of winter conditions favorable to trappers. A similar pattern occurred over the past 5 years.

Land otters were primarily harvested during December, although the unusually heavy snow during November 1998–99 contributed to a high harvest during that month (Table 5). There were relatively few otters taken in February during the reporting period compared to previous years.

Most wolverine harvest occurred during January and February (Table 6). Historically, November and December have also been productive.

The highest harvest of marten occurred during January (33%) and December (26%), followed by November (21%) and February (20%). Data were available for 1999–2000 only.

Transport Methods. Beaver trappers consistently used highway vehicles for the majority of transportation (Table 7). Heavy reliance on highway vehicles occurred because the Copper River Highway provided easy access to high beaver populations in Unit 6C. Land otter trappers used primarily boats for transportation (Table 8). Wolverine trappers and hunters used mostly snow machines for transport (Table 9). The exception was increased use of ATVs in 1997–98. During 1999, marten trappers used primarily snowmachines (58%), followed by ATVs (27%).

HABITAT

Assessment

We searched 75 km of coastline in eastern PWS (Orca Inlet and Deep, Nelson, Windy, Cedar and Sheep Bays) for land otter latrine sites and located 45 active sites. During summer, 2001 we will search for additional sites in Port Gravina and Simpson Bay, conduct a habitat assessment at each site, and select sites for long-term monitoring of otter use. Our goal is to establish a technique to monitor trends in otter density and abundance for management purposes.

CONCLUSIONS AND RECOMMENDATIONS

Quantifiable management objectives need to be established for beavers, land otters and wolverines. Harvest information is available for all these species from sealing records, and application of existing and emerging methodologies may provide opportunities to monitor population trends.

Harvests of most furbearers were within sustainable limits, and no changes in seasons or bag limits are recommended.

LITERATURE CITED

- COURTRIGHT, A. M. 1968. Game harvests in Alaska. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Report. Juneau.
- GRIESE, H. J. 1990. Unit 6 furbearer survey-inventory progress report. Pages 42–55 in S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Volume XX. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-2, Study 7.0. Juneau.
- . 1988a. Unit 6 furbearer survey-inventory progress report. Pages 24–26 in S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Vol. XVII. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-22-5, Job 7.0. Juneau.
- . 1988b. Unit 6 furbearer survey-inventory progress report. Pages 31–44 in S. O. Morgan, editor. Annual report of survey-inventory activities. Part XIV. Furbearers. Volume

XVIII. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-22-6, Job 7.0. Juneau.

HELLER, E. 1910. Mammals of the 1908 Alexander Alaska expedition, with descriptions of the localities visited and notes on the flora of the Prince William Sound region. University of California Publications in Zoology. 5(11):321–360.

NOWLIN, R.A. 1993. Unit 6 furbearer survey-inventory management report. Pages 47–58 *in* S.M. Abbott, editor. Furbearer survey-inventory management report. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Report Project W-23-3, W-23-4, Study 7.0. Juneau.

RAUSCH, R. 1977. Alaska wildlife management plans, southcentral Alaska. Alaska Department of Fish and Game. Juneau.

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Please cite any information taken from this section, and reference as:

Crowley, D. W. 2001. Unit 6 furbearer management report. Pages 83–93 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 6 beaver harvest, 1995–2000

Regulatory year	Reported harvest				Method of take				Successful trappers
	Juv. ^a (%)	Adults	Unk.	Total	Trap/snare(%)	Shot	(L&S)	Unk.	
1995–96	5 (11)	39	4	48	48 (100)	0	0	0	10
1996–97	9 (13)	62	20	91	91 (100)	0	0	0	9
1997–98	14 (22)	49	17	80	80 (100)	0	0	0	10
1998–99	4 (17)	20	9	33	33 (100)	0	0	0	5
1999–00	23 (29)	78	7	108	108 (100)	0	0	0	10

^a Beavers $\leq 52''$

Table 2 Unit 6 land otter harvest, 1995–2000

Regulatory year	Reported harvest				Method of take				Successful trappers
	M	F (%)	Unk.	Total	Trap/snare (%)	Shot	(L&S)	Unk.	
1995–96	73	29 (28)	1	103	101 (98)	2	0	0	13
1996–97	58	32 (36)	16	106	102 (96)	4	0	0	11
1997–98	35	23 (40)	18	76	45 (64)	25	0	6	17
1998–99	10	16 (62)	10	36	31 (97)	1	0	4	10
1999–00	32	14 (30)	1	47	33 (89)	4	0	0	14

Table 3 Unit 6 wolverine harvest, 1995–2000

Regulatory year	Reported harvest				Method of take				Successful trappers
	M	F (%)	Unk.	Total	Trap/snare (%)	Shot	(L&S)	Unk.	
1995–96	15	4 (21)	0	19	18 (95)	1	0	0	9
1996–97	16	9 (36)	0	25	21 (95)	1	0	3	10
1997–98	11	4 (27)	0	15	13 (87)	2	0	0	9
1998–99	15	6 (29)	0	21	18 (86)	3	0	0	9
1999–00	6	4 (40)	0	10	9 (90)	1	0	0	3

Table 4 Unit 6 beaver harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods							
	October	November	December	January	February	March	April	<i>n</i>
1995–96	0	0	31	27	18	24	0	45
1996–97	0	0	14	14	25	46	0	91
1997–98	6	9	16	19	16	24	0	80
1998–99	0	24	39	27	9	0	0	33
1999–00	0	21	12	8	22	18	19	108

^a Eight additional beavers taken under beaver damage control permit in May.

Table 5 Unit 6 land otter harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods						<i>n</i>
	October	November	December	January	February	March	
1995–96	0	1	50	11	34	5	103
1996–97	0	1	25	32	39	3	106
1997–98	0	18	26	21	14	13	76
1998–99	0	53	28	19	0	0	36
1999–00	0	9	49	19	6	17	47

Table 6 Unit 6 wolverine harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods						<i>n</i>
	October	November	December	January	February	March	
1995–96	0	11	26	32	26	5	19
1996–97	4	32	12	48	4	0	25
1997–98	7	7	20	47	20	0	15
1998–99	5	11	5	21	47	11	19
1999–00	10	30	0	10	50	0	10

Table 7 Unit 6 beaver harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest						<i>n</i>
	Boat	3-or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	
1995–96	0	0	0	0	98	2	48
1996–97	27	14	0	11	47	0	91
1997–98	0	13	0	0	54	16	80
1998–99	2	0	5	0	13	39	33
1999–00	0	0	7	0	98	3	108

Table 8 Unit 6 land otter harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							<i>n</i>
	Dogsled skis snowshoes	Boat	3-or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown	
1995–96	0	81	1	3	0	16	0	103
1996–97	0	75	2	2	0	21	0	106
1997–98	0	39	5	12	0	36	0	76
1998–99	0	53	0	0	0	36	0	36
1999–00	43	49	0	2	0	43	0	47

Table 9 Unit 6 wolverine harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							<i>n</i>
	Airplane	Dogsled skis snowshoes	Boat	3-or 4-wheeler	Snowmachine	Highway vehicle	Unknown	
1995–96	26	11	0	5	32	26	0	19
1996–97	4	0	0	8	32	44	12	25
1997–98	7	7	7	27	33	20	0	15
1998–99	0	10	10	5	57	19	0	21
1999–00	10	0	0	0	90	0	0	10

SPECIES
MANAGEMENT REPORT

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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 7 and 15 (8,397 mi²)

GEOGRAPHIC DESCRIPTION: Kenai Mountains

BACKGROUND

Historically, trapping was an important part of the Kenai Peninsula's culture and economy. Over the past two decades, trapping has evolved into primarily a recreational activity with few dedicated trappers remaining because of increased restrictions and reductions in pelt prices. Beaver, land otter, wolverine, lynx, coyote, mink and weasel are found throughout the Kenai Peninsula at varying density levels dependent upon habitat quality or prey abundance. The distribution and density of red fox and marten are limited. Red fox were abundant prior to 1930 according to long-time Kenai residents, however they quickly disappeared as coyotes established and rapidly increased during the 1930s. Unit 15C currently supports a small remnant population of red fox with an occasional observation reported from other areas of the Kenai Peninsula. Coyotes are widely distributed and abundant.

Marten are moderately abundant in Unit 7 but are rare in Unit 15 with the exception of the portion of 15B East north of Kenai River. Two marten trapped in Unit 15C during 1997-98 and one the previous year were the only ever recorded in this Unit. Because marten have never been common in Unit 15, I suspect that habitat rather than human-induced mortality controls their distribution on the Kenai.

Beavers were common in suitable habitat on the Kenai Peninsula; however, population density and trends have not been measured and are poorly understood in most areas. Incidental observations and the trend in nuisance beaver complaints indicate that beaver populations peaked about 1984 and have remained relatively stable.

Land otters are common in inland waters and sheltered coastal areas of the Kenai Peninsula. Little is known about the population dynamics of this species. Observations and harvest information indicate that otters are most abundant in drainages that support anadromous fish, stream connected lakes and in sheltered coastal waters such as the south shore of Kachemak Bay.

Wolverines are most commonly found in the Kenai Mountains, including the southern and eastern peninsula coastal areas, Caribou Hills, and the hilly terrain that forms the headwaters of

the Deep Creek and Anchor River drainages. Wolverines are seldom observed in the northern lowlands or the western coastal fringes of the peninsula. The historical distribution of wolverines on Kenai Peninsula has not been documented, however, historical harvest records suggest a wider distribution during the late 1960s and early 1970s when moose densities were highest and wolf density low.

Lynx are cyclically abundant in the forest habitats of the Kenai Peninsula. Early-seral, mixed deciduous-spruce forests in Units 15A and 15B appear to have a higher carrying capacity for snowshoe hares and consequently, lynx numbers are usually higher in these areas than in the subclimax spruce forests of Unit 15C and Unit 7. Lynx density began to increase in about 1994–95 as the snowshoe density increased. Snowshoe hares increased until the summer of 1996 then remained stable until 1998. Reports from trappers suggest hares started to decline in the summer of 1999 but were still high in pockets of high quality habitat. Trapping season reopened in Unit 7 and Units 15B and C in 1996–97, with a Jan. 1 to 31 season. These units were last opened in 1987–88. Unit 15A, closed in 1994–95 was reopened in 1997–98 along with the remainder of Units 15 and 7 from January 1 to February 15.

Mink and weasel are common throughout Units 7 and 15. Although their pelt value is generally low they are an important furbearer for recreational trappers and young trappers. Muskrats remained scarce throughout the units during this reporting period. Research has not been conducted to determine the controlling factors that regulate muskrat numbers, however, it is believed that mid-winter flooding and overflow of lakes and rivers is the reason survival is low.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Kenai Peninsula: A) maintain furbearer trapping seasons and bag limits consistent with population levels during periods of pelt primeness; B) maintain furbearer hunting seasons and bag limits consistent with population levels, but not necessarily limited to periods of pelt primeness; C) to obtain sufficient data to develop measurable population objectives.

MANAGEMENT OBJECTIVES

Beaver

To maintain beaver populations capable of sustaining an average annual harvest of 150 through 2005.

Land Otter

To maintain otter populations capable of sustaining an annual harvest of 35 through 2005.

Wolverine

To maintain wolverine populations capable of sustaining an annual harvest of 20 through 2005.

Lynx

To maintain populations capable of sustaining a harvest commensurate with the current population size, reproductive status and trend. Hunting and trapping seasons will be allowed only during years of lynx abundance.

Marten

To maintain a population of marten capable of sustaining an annual harvest of 35 through 2005.

METHODS

Monitor harvest through mandatory sealing program for lynx, land otter, wolverine, beaver and marten and reports from local trappers. Lynx population status and trend was monitored periodically using a track count census technique in Unit 15A. Fur acquisition reports provided additional harvest data for those species not required to be sealed.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We have conducted no formal research to document the status and trend of furbearers in Units 7 and 15 except monitoring of lynx by the U.S. Fish and Wildlife Service. Preliminary results from their study indicated the population has recovered from a cyclic low period from 1987 to 1992. Distribution and abundance of other furbearers appears to be stable.

Population Size:

No Data Available

Population Composition:

No Data Available

MORTALITY:

Harvest:

Season and Bag Limit.

Beaver

Season was open from February 1 to March 31 in Units 7 and 15 until 1992–93 when it was extended to December 1 to March 31. In 1997–98 the season was extended again to November 10 to March 31. The bag limit was 20 beaver per person.

Coyote

Seasons were open from November 10 to February 28 in Units 7 and 15 until 1996–97. In 1997–98 the season was extended to November 10 to March 31. The bag limit for coyote was not limited.

Wolverine and Red Fox

Season was open from November 10 to February 28 in Units 7 and 15. The number allowed was not limited on wolverine but red fox harvest was limited to one per trapper. Unit 15A was closed to trapping wolverine from 1987–88 to 1996–97.

Lynx

Season was closed beginning in 1987 for trapping and 1988 for hunting. Trapping season was reopened from January 1 to 31 in 1996, in Unit 7 and Units 15B and 15C. In 1997–98 Units 7 and 15 were opened to trapping from January 1 to February 15 and for hunting from November 10 to January 31. The number allowed was not limited.

Mink and Weasel

Seasons were open from November 10 to January 31 in Units 7 and 15. The number allowed was not limited.

Marten

Season in that portion of 15B east of Kenai River, Skilak Lake, and north of Skilak River was closed. The remainder of Unit 15 and Unit 7 were open from November 10 to January 31, with no bag limit.

Muskrat

Season was open from November 10 to May 15 for Units 7 and 15, with no bag limit.

Land Otter

Season was open from November 10 to January 31 in Units 15A and 15B and from November 10 to February 28 in Units 15C and Unit 7 until the 1996–97 season. From 1997–98 the season was November 10 to February 28 for Units 7 and 15, with no bag limit.

Board of Game Actions and Emergency Orders. A thorough review of the trapping program on Kenai Peninsula was completed during the March 13 to 23, 1997 Board of Game meeting. The following actions were taken: the beaver trapping season was extended from December 1 to March 31 to November 10 to March 31. The bag limit of 20 beaver per person remained in place. Land otter seasons were extended in Units 15A and 15B to be consistent with the remainder of the peninsula. The season for trapping otters is now November 10 to February 28. Wolverine trapping season was reopened in Unit 15A with the same season as the remainder of the peninsula, November 10 to February 28. Coyote and wolf trapping seasons were extended from November 10 to February 28 to November 10 to March 31 for the peninsula. The mandatory 5-day sealing for wolves taken in Unit 15A was repealed. Lynx season was extended from January

1 to 31 to January 1 to February 15, including Unit 15A. A season allowing hunting for lynx from November 10 to February 15 was also approved with a bag limit of 2 per season.

Hunter-Trapper Harvest. Since 1995–96, the annual beaver harvest has exceeded 150 in 4 of 5 years, averaged 166 and ranged from 132–209, according to sealing certificates (Table 1). Harvest declined from 156 in 1997–98 to 132 in 1998–99 then increased the next year. The decline in 1998–99 was because of the severe winter where deep snow restricted trapper activity rather than a decline in beaver density. Increasing the season length beginning in 1997–98 did not result in a higher harvest the following year. The order of magnitude of harvest by Unit during the past 5 years has been 7 > 15C > 15A > 15B. Historically, Unit 15A produced the highest harvest, however with increased restrictions on trapping within the Kenai National Wildlife Refuge portions of 15A, trapping effort has shifted to Unit 7 and 15C. Recreational trappers are responsible for most of the beaver harvest; few trappers take more than 10 beavers annually.

Marten were added to the list of species requiring mandatory sealing during the 1988-89 trapping season. Table 2 shows the past five years of trapping data. The annual harvest averaged 71, ranging from 55–102. The harvest averaged 67 percent males over the past five years. All marten, except 2 trapped in Unit 15C and 1 in 15B, were trapped in Unit 7. Marten apparently are better suited to mountainous habitat with consistent weather patterns and deep snow found in Unit 7. Unit 15 commonly has inconsistent weather with frequent periods of rain during mid-winter. However, increased sightings of marten and their tracks in Units 15 B and C suggest marten range may be expanding.

Otter harvests have shown a decline over the past 3 years with mean of 39 compared to 71 for the previous 2 years (Table 3). The mean annual, 5-year harvest was 52 otters with a range of 35–72. Males have outnumbered females in 4 of the past 5 years; the mean 5-year percentage of males in the harvest was 54 percent.

In the past 5 years, the reported wolverine harvest has decreased (Table 4). The mean annual, 5-year harvest was 23 wolverines ranging from 15–34. Males have predominated in the harvests, with a 5-year mean of 61 percent.

Lynx population on Kenai Peninsula increased noticeably during the mid-1990s in response to an increase in the abundance of snowshoe hares. Harvest records indicate lynx density remained high from 1997–98 to 1999–00. The previous high in lynx density in Unit 15A and 15B appeared to peak in either 1985 or 1986 compared to a 1987 peak in Unit 15C according to harvests and reports from experienced trappers. Unit 7 has not demonstrated the extreme changes in density compared to Unit 15. The reason for a lower but more stable population in Unit 7 is the lack of widespread habitat to support snowshoe hares. Snowshoe hare populations seem to remain moderately abundant in Unit 7 compared to extreme cyclical fluctuations in Unit 15.

Lynx trapping season was reopened in 1996–97 in Unit 7 and Units 15B and C, resulting in a harvest of 52 lynx (Table 5). Unit 15A was not opened because current lynx research conducted by Kenai National Wildlife Refuge staff indicated lynx density in this unit was lower than other areas in the Unit. Unit 15A was opened in 1997–98 and accounting for 66 percent of the Unit 15 harvest, indicating the research efforts had grossly underestimated the density of lynx in Unit

15A. The 15A mean annual harvest over the past 3 years was 66 percent of the Unit 15 harvest. The 1997–98 harvest was comprised of 105 (74%) adults and 37 (26%) kittens. The 1998–99 and 1999–00 harvest and percent kittens were: 152 and 24 percent and 146 and 21 percent, respectively.

Harvest Chronology. Tables 6 through 10 show the chronology for reported harvest by percent for beaver, marten, otter, wolverine and lynx. General analyses show most trapping success occurs early-to-mid season with the exception of wolverine trapping. Because wolverines are generally found in remote, mountainous terrain where access is difficult, they are not readily available to trappers until late in the season when driven out of the mountains by deep snow. The majority of the harvest occurred in January and February in the past 5 years.

Transport Methods. Tables 11 through 15 show harvest percent by transport method for beaver, otter, wolverine and lynx. Because several (dogsled, skis and snowshoes) transport types are listed under one category, the reported transport method used is misleading as shown in these tables. Generally, trappers in Units 7 and 15 use a highway vehicle to access their trapline and then use snowshoes or a snowmachine as they travel along their trapline. Less than 7% of the trappers used aircraft and dog teams, except to trap otters. However, trappers using these transport methods are generally more successful.

CONCLUSIONS AND RECOMMENDATIONS

The current density, allowing for a mean harvest of 166 beaver over the past 5 years, is acceptable under the stated management objective. In fact, beaver populations are probably underutilized in portions of the Peninsula and, in particular, in Unit 15C. Trapping effort appears to have decreased in 1998–99 because of the severe winter with deep snow accumulation. Initiation of beaver cache surveys along several representative drainages is recommended to monitor population trends and to determine whether additional harvesting is warranted.

Because harvests of marten have only been documented through mandatory sealing since 1988–89, data indicating long-term trends in harvests are unavailable. However, it was interesting to note that only 3 marten have been reported from Unit 15 in the past 2 decades, indicating marten are rare in this unit. Because historical records suggesting marten were trapped in Unit 15 are also rare and controversial as to authenticity, this data probably supports the theory that Unit 15 is poor marten habitat compared to Unit 7. Harvest was distributed over most of Unit 7 and was generally confined near a road system due to the unit's remoteness.

Land otter harvests decreased from a mean of 71 between 1995–96 and 1996–97 to 39 from 1997–98 to 1999–00. The sharp decrease in interest was probably due to an shift in effort to trap lynx rather than a reduction in the density of otter in the Units. Reports from trappers and staff observation suggest land otter were as abundant during 1999–00 as the previous four years. The 5-year mean harvest of 52 exceeded the minimum management objective.

Wolverine harvests have decreased steadily over the past 3 years, reaching a low of 15 harvested in 1999–00. Males predominated in the harvest in all years except 1999–00 when trappers reported a catch of 36 percent males and 64 percent females. Overall males composed an average of 61 percent of the harvest and I believe that by and large the impact to the wolverine

population was minimal during the past 5 years. The decreased harvest can be attributed to a decreased effort in trapping for wolverine by a few trappers that usually target this species. Lynx trapping was reopened in 1996–97, and I believe this shifted the effort away from both wolverine and otter trapping.

Lynx management on the Kenai Peninsula has followed the recommendations of Brand and Keith (1979). Their study indicated that, during a lynx population decline in Alberta, trapping mortality was additive to natural mortality. Using computer modeling, they showed that more lynx would be produced and greater long-term harvest would be achieved when trapping was curtailed for 3 to 4 years, starting with the second year after the lynx harvest peak. This harvest strategy is currently implemented on the Kenai Peninsula. Staff observations and reports from longtime trappers suggest the hare cycle showed a slight increase beginning in 1993–94. Lynx density increased because of hunting and trapping closures and the increase in their primary prey, snowshoe hares.

Trapping for lynx was reopened in Unit 7 and Units 15B and C in 1996–97, following a 9-year closure. Hunting for lynx remained closed until the following year. Although reports from trappers and incidental observations from department staff suggested that lynx density in Unit 15A was higher than other areas on the Kenai and should be reopened, research from Refuge staff demonstrated lower numbers in Unit 15A. Over the next 3 years the harvest indicated the research program grossly underestimated the density in 15A. An annual average of 147 lynx were harvested in the past 3 years with a mean of 66 percent from 15A. The percent kittens in the harvest during that period averaged 24 percent with a slight decreasing trend. The season was reduced in 1999–00 by 1 to 3 in anticipation of the decline in lynx numbers following the decline in snowshoe hare density.

In accordance with our harvest tracking strategy, I recommend we maintain the January 15 to February trapping and November 10 to January 31 hunting (2 lynx limit) seasons through 2001–02.

No changes are recommended for the other species.

LITERATURE CITED

BRAND, C. AND L. KEITH. 1979. Lynx demography during a snowshoe hare decline in Alberta. *Journal of Wildlife Management* 43(4): 827–849.

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Please cite any information taken from this section, and reference as:

Spraker, T. H. 2001. Units 7 & 15 furbearer management report. Pages 94–114 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Summary of annual beaver harvests on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Game Management Units				All 15	Total
	7	15A	15B	15C		
1995–96	87	43	0	38	81	168
1996–97	102	50	4	53	107	209
1997–98	71	31	12	42	85	156
1998–99	67	25	12	28	65	132
1999–00	70	28	1	68	97	167
Total	397	177	29	229	435	832
<i>x</i>	79	35	6	46	87	166

Table 2 Summary of annual marten harvests on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7 68 (67)	34 (33)	--	102	
	15 --	--	--	0	
1996–97	7 34 (62)	21 (38)	3	58	
	15 --	1 (100)	--	1	
1997–98	7 26 (57)	20 (43)	3	49	
	15 2 (100)	--	--	2	
1998–99	7 33 (60)	22 (40)	--	55	
	15 --	--	--	0	
1999–00	7 53 (73)	20 (27)	14	87	
	15 --	--	--	0	
Total	216 (67)	118 (33)	20	354	
<i>x</i>	43	24	4	71	

Table 3 Summary of land otter harvest on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7	10	4	2	16
	15A	9	13	--	22
	15B	--	1	--	1
	15C	15	13	2	30
	Subtotal	34 (52)	31 (48)	4	69
1996–97	7	10	8	--	18
	15A	17	8	1	26
	15B	1	1	--	2
	15C	14	12	--	26
	Subtotal	42 (59)	29 (41)	1	72
1997–98	7	1	1	--	2
	15A	5	9	--	14
	15B	1	2	2	5
	15C	9	11	--	20
	Subtotal	16 (41)	23 (59)	2	41
1998–99	7	1	1	--	2
	15A	6	--	--	6
	15B	4	7	--	11
	15C	10	6	--	16
	Subtotal	21 (60)	14 (40)	--	35

Table 3 Continued

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1999–00	7	5	3	1	9
	15A	7	5	1	13
	15B	3	--	--	3
	15C	8	9	--	17
Subtotal		23 (58)	17 (42)	2	42
Total		136(54)	114 (46)	9	259
<i>x</i>		27	23	2	52

Table 4 Summary of wolverine harvest on Kenai Peninsula by game management unit, 1995–99

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
1995–96	7	5	6	1	12
	15A	--	--	--	--
	15B	2	2	--	4
	15C	12	1	--	13
Subtotal		19 (66)	9 (33)	1	29
1996–97	7	11	7	--	18
	15A	1	--	--	1
	15B	4	1	--	5
	15C	6	3	1	10
Subtotal		22 (66)	11 (33)	1	34
1997–98	7	5	5	--	10
	15A	--	--	--	--
	15B	1	2	--	3
	15C	4	2	--	6
Subtotal		10 (53)	9 (47)	--	19
1998–99	7	6	3	3	12
	15A	--	--	--	--
	15B	1	2	--	3

Table 4 Continued

Regulatory year	Unit	Males (%)	Females (%)	Unk.	Total
	15C	2	--	--	2
Subtotal		9 (64)	5 (36)	3	17
1999-00	7	3	5	4	12
	15A	--	--	--	--
	15B	--	--	--	--
	15C	1	2	--	3
Subtotal		4 (36)	7 (64)	4	15
Total		64 (61)	41 (39)	9	114
X		13	8	2	23

Table 5 Summary of lynx harvest on Kenai Peninsula by game management units, 1995–99

Regulatory year	Unit	<u>Adults</u>			<u>Kittens</u>			%	Unclass	Total
		M	F	Unk.	M	F	Unk.			
1995–96 ^a	7	--	--	--	--	--	--		--	--
	15A	--	1	--	--	--	--		--	1
	15B	--	--	--	--	--	--		--	--
	15C	--	1	--	--	--	--	--	--	1
	Subtotal		--	2	--	--	--	2		
1996–97	7	5	4	6	--	--	3		--	18
	15A ^b	2	1	--	--	1	--		--	4
	15B	6	6	--	2	4	--		--	18
	15C	6	6	--	--	--	--		--	12
	Subtotal	19	17	6	2	5	3	19	--	52
1997–98 ^c	7	10	9	3	2	3	--		1	28
	15A	38	19	1	4	13	1		--	76
	15B	9	7	--	2	4	--		--	22
	15C	3	6	--	2	6	--		--	17
	Subtotal	60	41	4	10	26	1	26	1	143
1998–99	7	7	8	--	1	3	--		2	21
	15A	41	23	1	10	7	4		--	86
	15B	5	5	--	1	2	--		1	14
	15C	10	12	1	5	3	--		--	31
	Subtotal	63	48	2	17	15	4	24	3	152

Table 5 Continued

Regulatory year	Unit	<u>Adults</u>			<u>Kittens</u>			%	Unclass	Total
		M	F	Unk.	M	F	Unk.			
1999-00	7	6	3	3	2	2	--		--	16
	15A	41	24	--	8	9	--		2	84
	15B	5	8	--	--	2	--		--	15
	15C	15	12	--	1	3	--		--	31
	Subtotal	67	47	3	11	16	--		2	146
Total		209	155	15	40	62	8		6	495
\bar{x}		42	31	3	8	12	1	21	1	99

a. Trapping was closed in 1995-96 in Unit 7 and 15, incidental take only.

b. Trapping opened in Units 7, 15B and 15C in 1996-97, 15A opened in 1997-98.

c. Hunting season, Nov. 10 to Jan. opened in 1997-98 in Units 7 and 15.

Table 6 Units 7 & 15 beaver harvest chronology percent by month, 1995–2000

Regulatory year	Month					Unknown	Total
	November	December	January	February	March		
1995–96	--	4	33	38	16	9	168
1996–97	--	16	21	42	20	1	209
1997–98	29	27	6	16	21	--	156
1998–99	41	16	15	7	3	17	132
1999–00	59	--	14	9	15	2	167

^a Season extended to Nov. 10 - March 31 in 1997–98.

Table 7 Units 7 & 15 marten harvest chronology percent by month, 1995–2000

Regulatory year	Month					Unknown	Harvest
	November	December	January	February	March		
1995–96	11	48	41	--	--	--	102
1996–97	17	46	25	--	--	12	59
1997–98	21	48	27	4	--	--	51
1998–99	31	39	30	--	--	--	55
1999–00	35	--	60	4	--	--	87

Table 8 Units 7 & 15 otter harvest chronology percent by month, 1995–2000

Regulatory Year	Month					Unknown	Harvest
	November	December	January	February	March		
1995–96	7	36	42	12	--	3	69
1996–97	14	36	39	11	--	--	72
1997–98	40	28	15	13	--	5	41
1998–99	31	11	37	20	--	--	35
1999–00	25	4	36	32	4	--	42

Table 9 Units 7 & 15 wolverine harvest chronology percent by month, 1995–2000

Regulatory year	Month					Unknown	Harvest
	November	December	January	February	March		
1995–96	10	--	52	24	3	10	29
1996–97	4	32	43	21	--	--	34
1997–98	21	26	5	37	11	--	19
1998–99	--	12	41	35	6	6	17
1999–00	15	--	38	38	--	8	15

Table 10 Units 7 & 15 lynx harvest chronology percent by month, 1995–2000

Regulatory year	Month					Unknown	Harvest
	November	December	January	February	March		
1995–96	--	--	50	50	--	--	2
1996–97	--	2	--	98	--	--	52
1997–98	2	1	56	38	1	--	143
1998–99	1	1	57	38	--	2	152
1999–00	2	--	64	30	1	2	146

Table 11 Units 7 & 15 beaver harvest percent by transport method, 1995–2000

Regulatory Year	Percent of harvest							Unk.	Harvest
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1995–96	--	--	--	--	20	8	61	12	168
1996–97	1	--	--	--	62	--	20	17	209
1997–98	--	--	8	--	58	--	34	--	156
1998–99	2	--	7	2	35	--	54	--	132
1999–00	4	--	--	--	50	4	43	--	167

Table 12 Units 7 & 15 marten harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							Harvest	
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine ORV	Highway vehicle	Unk.		
1995–96	--	--	--	--	49	4	41	6	102
1996–97	--	--	--	--	29	--	47	24	59
1997–98	--	--	--	--	45	--	55	--	51
1998–99	--	--	--	--	41	--	59	--	55
1999–00	--	--	4	--	71	--	25	--	87

Table 13 Units 7 & 15 otter harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							Harvest	
	Airplane	Dogsled	Boat	3 or 4-wheeler	Snowmachine ORV	Highway vehicle	Unk.		
1995–96	19	1	13	--	7	1	38	20	69
1996–97	11	--	3	--	35	--	33	18	72
1997–98	20	--	27	--	27	--	27	--	41
1998–99	--	--	24	10	24	5	38	--	35
1999–00	--	--	24	--	41	--	34	--	42

Table 14 Units 7 & 15 wolverine harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							Harvest	
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicleUnk.		
1995–96	--	--	7	--	59	--	3	31	29
1996–97	--	6	--	--	71	--	6	18	34
1997–98	--	--	9	9	45	9	27	--	19
1998–99	--	--	8	--	92	--	--	--	17
1999–00	--	--	25	--	75	--	--	--	15

Table 15 Units 7 & 15 lynx harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							Unk.	Harvest
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1995–96	--	--	--	--	--	--	50	50	2
1996–97	2	--	--	62	--	--	25	12	52
1997–98	1	--	--	--	88	--	11	--	143
1998–99	--	--	2	1	85	--	12	--	152
1999–00	2	--	--	--	77	--	21	--	146

SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 8 (5,097 mi²)

GEOGRAPHIC DESCRIPTION: Kodiak and Adjacent Islands

BACKGROUND

Archeological evidence indicates that the only furbearers indigenous to the Kodiak archipelago are red foxes, land otters, and short-tailed weasels (Rausch 1969). Skeletal remains of other species have been found in midden sites, but Native traders probably brought these into the area. Wildlife management agencies introduced beavers and muskrats in 1925 and 1929. Mink, marten, and red squirrels were introduced in 1952 (Burris and McKnight 1973). Healthy populations of all of these furbearers; except mink, now reside in the unit. Raccoons were illegally introduced at various times, but sightings are now rare. Norway rats are common in the vicinity of Kodiak. Captive red and arctic foxes escaped or were released from the widespread fox farms in the early 1900s. Arctic foxes occur only on Chirikof Island. Feral dogs occur on the southwest end of Kodiak, where they occasionally form packs and hunt deer.

Red foxes, land otters, beavers, and short-tailed weasels are the most abundant furbearers on the archipelago. Marten occur only on Afognak Island. Trappers most commonly pursue red foxes, land otters, and beaver. Furbearer populations and trapping pressure have been stable during the past decade. No major changes in regulations occurred during this report period.

Recreational trappers conduct most of the trapping in Unit 8, and effort is affected more by weather than by vagaries in the fur market. Little fur is exported for sale; most is kept on the island for personal use or to sell locally.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Management objectives for furbearers in Unit 8 are to: develop measurable objectives for all furbearer species; and collect harvest data on land otters and beavers through the mandatory sealing program and statewide trapper questionnaire.

METHODS

We monitored beaver and land otter harvests through a mandatory sealing program. We sent statewide trapper questionnaires to trappers each year and recorded the number of furs exported from the state.

RESULTS AND DISCUSSIONS

POPULATION STATUS AND TREND

Population Size

No objective estimates of furbearer populations have been done. Most trappers reported furbearer populations were high during this report period.

MORTALITY

Harvest

Season and Bag Limit. Beaver trapping season was open from 10 November to 30 April. The bag limit was 30 beavers per trapper.

The red fox trapping season was open from 10 November to 31 March with no limit on the number of animals a trapper could legally take. The red fox hunting season was from 1 September to 15 February and the bag limit was 2 foxes.

The marten, weasel, and land otter trapping season was from 10 November to 31 January with no limit on the number of these animals a trapper could legally catch. The muskrat trapping season was from 10 November to 10 June with no bag limit on muskrats. There was no closed hunting or trapping season (nor bag limit) on squirrels.

Board of Game Actions and Emergency Orders. The Board of Game made no changes in furbearer trapping or hunting regulations in this report period.

Hunter/Trapper Harvest. Land otter harvests have fluctuated, with an increasing trend up until the 1999–2000 season. During the past 5 years (1995–2000), the annual harvests ranged from 100 to 173, with an average harvest of 137.2/year (Table 1). The number of otter trappers has fluctuated from 17–20, averaging 18.6/year. The average take per trapper ranged from 5.0 to 8.7, with an average of 7.4 otters/trapper per year.

Beaver harvests have also fluctuated, but no consistent trend was apparent. During the past 5 years (1995–2000), the annual harvests ranged from 38 to 50 and averaged 44.2/year (Table 2). The number of beaver trappers has fluctuated from 8 to 14, averaging 12.0/year. The average take per trapper ranged from 3.3 to 4.8, with an average of 3.8 beavers/trapper per year.

Red foxes are the most commonly pursued furbearer in Unit 8, but current methods of monitoring harvest underestimate the take. The 1991–92 to 1997–98 fur export permit data indicated an average annual harvest of 34.8/year. The average annual harvest by trappers and hunters is estimated at 300

red foxes. Some foxes are home-tanned or dried for wall hangings; we suspect that hides are often shipped without fur export permits.

Harvests of marten, squirrels, weasels, and muskrats were negligible. Occasionally, trappers made sets for marten on Afognak Island, but little trapping effort occurred for the remaining species.

Harvest Chronology. November is typically the most active month for fur trapping in Unit 8, but harvest chronology for both land otters and beavers has been variable (Tables 3 and 4, respectively).

Transport Methods. Highway vehicles and boats are the most common modes of transport for otter and beaver trappers (Tables 5 and 6, respectively), however methods are variable with aircraft and 3- or 4 wheelers common in some years.

Other Mortality

None noted.

HABITAT

Logging on Afognak Island was the only major land use activity altering furbearer habitat. Clear-cut logging of old-growth timber was detrimental to marten populations in Southeastern Alaska (Young 1990). Studies of the effects of logging on furbearers have not been conducted in Unit 8.

NONREGULATORY MANAGEMENT PROBLEMS/NEEDS

A population trend estimation technique for land otters should be developed. The land otter is the furbearer most susceptible to overexploitation in Unit 8. During the 1980–81 season, the harvest exceeded 400 otters, and in local areas up to 1 otter/mile of coast was harvested. Annual harvests have never reached that level again, but they have been steadily increasing for the past several years. As prices for otters remain high and prices for other furs decline, the otter harvest could quickly again become a concern. Without survey data, it will be difficult to properly assess impacts on the population.

Beavers caused occasional flooding of roads by plugging culverts. Approximately 1–5 nuisance beavers were removed adjacent to roads in northeastern Kodiak Island annually by trapping and shooting. The Department of Transportation is periodically issued a beaver depredation permit to allow them to control nuisance beavers along the highway.

Ground squirrels are chronic nuisances at the Kodiak State airport where they undermine runway edges and damage runway lights. The Department of Transportation has a permit to shoot ground squirrels.

Some conflicts between trappers and other recreational users occur where trappers make sets near beaches and roadsides. Deer are periodically caught in fox snares, and 1–2 deer per year are reported dead in snares. Domestic dogs and cats are also occasionally caught in these sets, prompting articles and letters to the local newspaper. Typically, inexperienced trappers are responsible for the snared deer and pets, and better trapper education could alleviate the problem.

CONCLUSION AND RECOMMENDATIONS

Harvests of all furbearer species were low and furbearer populations were high. Less than 20 trappers were active each year, and the average annual harvest of all species was estimated at 500 animals. Land otters were potentially susceptible to overharvest and a population trend estimation technique should be developed for that species. We should also develop and disseminate educational materials for trappers and pet owners suggesting ways to minimize trap-related injuries to pets.

LITERATURE CITED

BURRIS, O. E. AND D. E. MCKNIGHT. 1973. Game transplants in Alaska. Wildlife Technical Bulletin 4. Alaska Dep. Fish and Game. Juneau. Federal Aid Wildlife Restoration Project W-17-R. 57pp.

RAUSCH, R.L. 1969. Origin of the terrestrial mammalian fauna of the Kodiak Archipelago IN The Kodiak Island Refugium: Its geology, flora, fauna and history. T.N.V. Karlstrom and G.R. Ball, eds. The Boreal Institute, University of Alberta. Ryerson Press, Toronto, Canada. 262 pp.

YOUNG, E. L. 1990. Unit 4 furbearer survey-inventory progress report. Pages 26–31 *in* S. O. Morgan, ed. Annual report of survey-inventory activities. Part XIV. Furbearers Vol. XX. Alaska Dept. Fish and Game. Federal Aid in Wildlife Restoration Progress Report Juneau, 238 pp.

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Please cite any information taken from this section, and reference as:

Van Daele, L. J. 2001. Unit 8 furbearer management report. Pages 115–122 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 8 land otter harvest 1991–2000

Regulatory Year	Reported Harvest				Method of Take			Successful Trappers
	M (%)	F (%)	Unk	Total	Trap/Snare (%)	Shot (%)	Unk.	
1991–92	73 (50)	60 (42)	11	144	117 (82)	8 (6)	5	20
1992–93	38 (42)	36 (40)	17	91	72 (80)	13 (14)	6	17
1993–94	37 (54)	20 (29)	11	68	67 (99)	1 (1)	0	11
1994–95	33 (36)	34 (37)	24	91	76 (83)	14 (15)	1	15
1995–96	71 (51)	48 (35)	20	139	138 (99)	1 (1)	0	19
1996–97	59 (47)	50 (40)	17	126	124 (98)	2 (2)	0	18
1997–98	70 (47)	53 (36)	25	148	142 (96)	6 (4)	0	17
1998–99	77 (45)	59 (34)	37	173	143 (83)	25 (15)	5	19
1999–2000	48 (48)	28 (28)	24	100	93 (93)	5 (5)	2	20

Table 2 Unit 8 beaver harvest 1991–2000

Regulatory Year	Reported Harvest					Method of Take					Successful Trappers
	Juv. ^a	%	Adult	%	Total	Trap/Snare	%	Shot	%	Unk.	
1991–92	18	23	38	49	78	66	85	12	15	0	16
1992–93	13	20	49	75	65	60	92	9	14	0	8
1993–94	17	25	44	65	68	47	69	21	31	0	11
1994–95	2	7	22	76	29	21	72	3	10	5	8
1995–96	10	20	26	52	50	45	90	5	10	0	14
1996–97	9	24	28	74	38	37	97	1	3	0	8
1997–98	10	24	26	62	42	31	74	7	17	4	12
1998–99	8	19	35	81	43	39	91	4	9	0	13
1999–2000	4	8	28	58	48	39	81	4	8	5	13

^a Beavers ≤ 52"

Table 3 Unit 8 land otter harvest chronology percent by month, 1991–2000

Regulatory year	Harvest periods					<i>n</i>
	November	December	January	February ^a	Unknown	
1991–92	34	36	30	0	0	144
1992–93	44	35	14	0	7	91
1993–94	24	22	53	0	0	68
1994–95	40	30	27	2	1	91
1995–96	32	46	22	0	0	139
1996–97	44	21	35	0	0	126
1997–98	29	49	22	0	0	148
1998–99	66	26	8	0	0	173
1999–2000	38	45	15	0	2	100

^a Season closed 31 January

Table 4 Unit 8 beaver harvest chronology percent by month, 1991–2000

Regulatory year	Harvest periods						May	Unknown	<i>n</i>
	November	December	January	February	March	April			
1991–92	14	29	32	0	8	17	0	0	78
1992–93	15	31	6	29	18	0	0	0	65
1993–94	13	25	15	15	16	16	0	0	68
1994–95	38	7	28	0	0	10	0	17	29
1995–96	22	50	0	0	10	14	0	4	50
1996–97	71	21	0	3	3	3	0	0	38
1997–98	19	43	0	21	17	0	0	0	42
1998–99	60	34	0	0	0	5	0	0	43
1999–2000	52	15	15	15	4	0	0	0	48

Table 5 Unit 8 land otter harvest percent by transport method, 1991–2000

Regulatory year	Percent of harvest							Unknown	<i>n</i>
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot		
1991–92	20	67	6	0	3	1	3	0	144
1992–93	23	44	8	0	13	0	12	0	91
1993–94	41	31	4	0	19	4	0	0	68
1994–95	3	54	0	5	0	34	0	3	91
1995–96	0	48	0	0	0	42	6	3	139
1996–97	5	66	5	0	0	17	0	8	126
1997–98	5	68	14	0	0	14	1	0	148
1998–99	1	61	8	0	0	21	5	8	173
1999–2000	3	44	22	0	0	29	0	2	100

Table 6 Unit 8 beaver harvest percent by transport method, 1991–2000

Regulatory year	Percent of harvest							Unknown	<i>n</i>
	Airplane	Boat	3- or 4-wheeler	Snow machine	ORV	Highway vehicle	Foot		
1991–92	18	47	13	0	0	1	8	13	78
1992–93	8	17	29	0	0	8	0	28	65
1993–94	19	18	44	0	16	3	0	0	68
1994–95	3	28	0	24	0	28	0	5	29
1995–96	0	10	14	0	0	70	6	6	50
1996–97	0	0	37	0	0	61	0	3	38
1997–98	12	0	31	0	5	50	2	0	42
1998–99	0	77	2	2	0	12	0	7	43
1999–2000	4	40	17	0	0	25	4	10	48

SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 9 (45,522 mi²) and 10 (15,798 mi²)

GEOGRAPHIC DESCRIPTION: Alaska Peninsula; Aleutian and Pribilof Islands

BACKGROUND

Furbearers in this area include beaver, coyote, red fox, lynx, marten, mink, muskrat, land otter and wolverine. All species are found on at least part of the mainland of Unit 9. There are fewer furbearer species on the islands in both units. On some islands furbearers are present because of past introductions for fur farming or from efforts to establish harvestable wild populations.

Beavers are found on the mainland north of Port Moller. The most productive beaver habitat has a dependable water supply with little fluctuation in stream flow and is adjacent to abundant and easily accessible willow, aspen, cottonwood, or birch vegetation. Beavers are found from sea level to elevations of 2000 feet.

Coyotes apparently first arrived in Alaska about 1915 and were rare before 1980. They rapidly extended their range yet now are restricted to the mainland of Unit 9. Relatively few are trapped, usually incidentally to fox, lynx, or wolf harvests. Sport hunters generally take a few coyotes.

Red foxes are on the mainland, on some of the offshore Alaska Peninsula islands, and on the larger islands of the eastern Aleutians. Red fox introductions to the Aleutians and Alaska Peninsula islands began during Russian occupancy and continued through 1932. Some earlier red fox introductions succeeded but foxes were later exterminated to facilitate introduction of arctic foxes. Rabies, mange and distemper epidemics occur periodically in fox populations, resulting in widespread mortality.

Arctic foxes occur in a narrow band along the marine coast, on open tundra, and on sea ice many miles from shore. Their natural distribution extends to the northwestern shore of Bristol Bay. Blue color-phase arctic foxes were introduced dating back to the Russian period. Arctic foxes are noted for their wide fluctuations in population levels with periodic peaks approximately every 4 years. Their population densities are linked to cyclic fluctuations in small rodent populations. Foxes also patrol beaches in search of carrion. Foxes are an efficient predator of nesting birds and the USFWS is attempting to eliminate them from many of the islands.

Lynx inhabit the mainland north of Port Heiden. Primary a boreal species, though when prey are scarce lynx venture onto the tundra in search of Arctic hares, lemmings and ptarmigan. The lynx-hare cycle is well known, and population highs can sometimes be predicted every 8 to 10 years. However, Unit 9 is on the fringe of the range for both lynx and snowshoe hare and the fluctuations for both species are less consistent than elsewhere in Alaska.

Marten occur regularly only in the northern parts of Units 9A and 9B. The distribution of marten is limited primarily to climax spruce forests from sea level to timberline.

Mink inhabit the mainland of the Alaska Peninsula and on Unimak Island. Microtine populations typically fluctuate drastically and are the primary factor affecting mink abundance. An abundance of mice or hares in upland areas will sometimes prompt mink populations to expand inland in search of prey. In some areas spring flooding may reduce populations by drowning young mink in dens.

Land otters occur on the mainland, some adjacent islands east of the Alaska Peninsula, and Unimak Island. Otter populations are relatively stable, with coastal areas providing abundant marine food. Parasites and disease are not normally important mortality factors. Spring flooding occasionally drowns young otters in dens.

Wolverines live on the mainland and Unimak Island. Compared to other furbearers, wolverines never attain high densities, partially because of their large territorial requirements and low reproductive rate.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

Management objectives for furbearers in Units 9 and 10 have not been developed.

METHODS

We assessed population trends indirectly by monitoring harvests of sealed species, and by obtaining information from trappers on questionnaires. Fieldwork for surveying furbearers was not funded this report period. We made incidental observations of furbearers during moose, caribou and brown bear surveys.

Pelt sealing is required for beaver, lynx, otter, and wolverine and provided the most accurate and complete harvest information. Because furs kept for personal use were sometimes not reported, actual harvest exceeded those obtained from this data source.

The harvest of unsealed furbearers (coyote, red fox, arctic fox, marten, mink, and muskrat) could not be estimated with any confidence. However, trapper questionnaires and other incidental information provided a rough, qualitative index to trends in populations of furbearers and key prey species. The trapper questionnaire population abundance index (AI) was calculated by assigning rank values of 1 for "low," 5 for "moderate," and 9 for "high." Similarly, the trend

index (TI) used the same rank values for "fewer," "same," and "more than present the previous year."

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beaver. Beaver cache surveys have not been conducted since 1987. General observations during other survey flights, comments from trappers, and complaints from the public indicated beaver populations remained high north of Unit 9D. Before this reporting period, trappers consistently reported beavers as abundant (e.g., AI averaged 7.6 during 1991–93). However, during the trend index reported by trappers, beavers declined slightly to 6.1, 5.9, and 5.0 for 1991–92, 1992–93 and 1993–94, respectively. The apparent decline in beavers continued as trappers scored the AI at 6.0 and 5.0 and the TI at 6.0 and 4.0 in 1994–95 and 1995–96, respectively. Both the AI and TI increased in 1996–97 to 7.9 and 5.6, despite extremely low water levels during 1996–97 causing some freeze-out mortality. During 1997–1999, trappers rated beaver as abundant (average AI = 7) and increasing with TI of 5.0, 6.1 and 7.0 for these 3 years.

Coyote. Trappers rated the coyote population as being relatively low (AI of 3.0, 4.2 and 5.6), but increasing (TI of 5.7, 8.2, and 5.6) during 1994–96. Comments from hunters and observations by staff also indicate a slight increase in coyote numbers. During this reporting period coyotes appear to be moderately abundant (AI averaged 4.7) and relatively stable (TI averaged 5.1).

Red Fox. A moderate outbreak of rabies in 1997–1998 temporarily diminished the red fox population in 1998–99 (AI = 4.7, TI = 3.2), but it recovered within a year to more normal abundance in 1999–00 (AI = 7.3 and TI = 7.7).

Lynx. Trappers believed lynx abundance was low during 1997–99 (AI = averaged 3.3) but relatively stable during the period (TI = 4.6). Trappers reported that snowshoe hare abundance and trend were similar to that reported for lynx.

Marten. So few trappers (≤ 2 per year) rated marten abundance that meaningful interpretation is precluded. Marten distribution is very limited within Unit 9 and changes in status are difficult to document.

Mink. Mink abundance was reported as moderate (AI averaged 5.0) and relatively stable (TI averaged 5.4).

Otter. Otter abundance appears to have declined during 1997–99 (AI = 7.5, 5.0 and 3.9 and TI = 6.3, 4.1, and 3.9) during the reporting period. This decline may be related to weak salmon returns, especially in Unit 9B, during this reporting period

Wolverine. Trappers reported wolverine abundance as relatively scarce (AI averaged 3.4) but stable (TI averaged 4.9) during the reporting period.

MORTALITY

Harvest

Season and Bag Limits. The beaver trapping season in Unit 9 was 1 January to 31 March. The bag limit was 40 beavers per trapper. Starting in spring 2000, trappers in Unit 9B were allowed to take 2 beavers per day using firearms from 15 April–31 May. Unit 10 was not open for beaver trapping.

The coyote trapping season in Units 9 and 10 was 10 November to 31 March with no trapping bag limit. The coyote hunting season in these units was from 1 September to 30 April with a bag limit of 2.

The red fox and arctic fox trapping season in Units 9 and 10 was open from 10 November to 28 February with no bag limit. The red fox hunting season in both Units was from 1 September to 15 February and the bag limit was 2 foxes. The arctic fox hunting season in Unit 9 was open from 1 September to 30 April with a 2 fox limit. In Unit 10 there was no closed hunting season and no bag limit for arctic fox.

The lynx and marten trapping season in Unit 9 was 10 November to 28 February with no trapping bag limit for either species. The lynx hunting season in Unit 9 ran concurrent with the trapping season but the bag limit was 2. Unit 10 was not open for lynx or marten trapping or hunting.

The mink trapping season was 10 November to 28 February in Units 9 and 10, with no bag limit.

The muskrat trapping season in Units 9 and 10 was 10 November to 10 June with no bag limit. The otter trapping season in Units 9 and 10 was from 10 November to 31 March with no bag limit.

The trapping season for wolverines in Units 9 and 10 was from 10 November to 28 February with no bag limit. The hunting season for wolverines in Units 9 and 10 was from 1 September to 31 March with a bag limit of 1 per hunter.

Board of Game Actions and Emergency Orders. In 1999 the Board allowed trappers in Unit 9B to take 2 beavers per day with firearms only from 15 April–31 May. No other Board actions or emergency orders affected trapping or hunting of furbearers in Units 9 or 10 during this reporting period, except that

Hunter/Trapper Harvest. Beaver harvests have declined dramatically (Table 1) since 865 were taken in 1987–88. This is a result of reduced prices for pelts, high cost in both effort and expenses, and perhaps a diminished interest in trapping amongst village residents.

Lynx harvests have returned to more normal levels (range 19–38, Table 1) compared to previous years. Lynx were unusually abundant in Unit 9C during 1991–95 but harvest have dropped to an average of 4 during 1995–99. During the 9 years prior to 1991, an average of only 1 lynx per year was taken in Unit 9C.

Otter harvests have dropped precipitously since 120 were taken in 1996–97 (Table 1). Environment conditions (e.g. weak salmon escapements) may have reduced otter populations. However, otter harvests may also be related to the drop in interest in beaver trapping (which is clearly not related to any decline in the beaver population).

An average of 64 wolverines per year was taken from Unit 9 during 1974–94, but has ranged from 24 to 47 in the past 5 years (Table 1). Poor travel conditions and overall low fur prices reduced trapping effort. There has not been a reported harvest of wolverines from Unit 10 since 1980.

Permit Hunts. No special permits for trapping nuisance beavers were issued in Unit 9 during this reporting period.

Trapper Residency and Success. Data on trapper residency and success have not been specifically analyzed. Local residents from villages within the unit took most of the furbearers trapped in Unit 9. A few trappers from outside the area have flown into Units 9A and 9B to trap.

Harvest Chronology. The harvest chronology should be viewed cautiously because trappers do not always keep close track of when harvests occurred. Annual variations in chronology usually reflect weather and travel conditions, but January and February consistently are the most important months for trapping (Table 2).

Transport Methods. Snowmachines are the most common means of access for beaver, lynx, otter, and wolverine trappers (Table 3). ATVs were also an important means of access especially in parts of Unit 9 with unreliable or insufficient snowfall.

Other Mortality

Several red foxes, a wolf and the first coyote in Alaska were confirmed rabid during 1997–98.

HABITAT

No formal habitat assessment programs were conducted in Unit 9. Habitat enhancement is not necessary or practical in this relatively inaccessible area.

CONCLUSIONS AND RECOMMENDATIONS

The furbearer harvests in Units 9 and 10 appeared to be low and relatively stable. Low fur prices, difficult travel conditions and large refugia in National Parks have reduced harvests of most species below historic levels. Although information on population sizes was lacking, harvests of furbearers appeared below sustainable yield.

Harvest information was sufficient for management purposes for all species of furbearers requiring sealing in Unit 9. Harvest information for unsealed species, based on export and acquisition reports, was incomplete and potentially biased because of inaccurate unit coding by furbuyers and a lack of enforcement of fur export regulations. We have discontinued using these data.

Reports from trappers through both personal contact and trapper questionnaires provided a useful relative index to abundance and trend, but the number of responses per unit were generally inadequate to detect local trends.

We lacked adequate field observations to augment harvest data and trapper questionnaires in evaluating population sizes and trends. New methodology for assessing lynx and wolverine population densities are under development in Interior Alaska, but may not be easily applied in Unit 9 because of typically poor snow conditions. Given the lack of techniques to assess population status for most species and the low level of trapping pressure in recent years, there is little impetus to intensify management or develop management objectives.

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Please cite any information taken from this section, and reference as:

Sellers, R. A. 2001. Unit 9 & 10 furbearer management report. Pages 123–131 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 9 beaver, lynx, otter and wolverine harvests, 1995–2000

Regulatory year	Reported harvest							Method of take			Total trappers
	M	F	Unk.	Juv.	Adults	Unk.	Total	Trap/snare	Shot	Unk.	
<u>Beaver</u>											
1995–96	0	0	83	4	29	50	83	83	0	0	14
1996–97	0	0	127	17	67	43	127	127	0	0	29
1997–98	0	0	92	14	78	0	92	82	5	5	16
1998–99	0	0	85	7	35	43	85	76	9	0	15
1999–00	0	0	75	16	55	4	75	72	2	1	15
<u>Lynx</u>											
1995–96	0	0	23	4	16	3	23	17	3	3	12
1996–97	0	0	32	11	18	3	32	29	1	2	13
1997–98	0	0	19	7	7	5	19	17	0	2	8
1998–99	0	0	38	10	21	7	38	38	0	0	6
1999–00	0	0	32	5	24	2	32	21	3	8	13
<u>Otter</u>											
1995–96	29	19	9	0	0	57	57	48	1	8	15
1996–97	46	40	34	0	0	120	120	115	1	4	24
1997–98	37	24	10	0	0	71	71	70	1	0	21
1998–99	31	25	4	0	0	60	60	48	6	6	19
1999–00	17	13	1	0	0	31	31	29	2	0	13
<u>Wolverine</u>											
1995–96	18	7	1	0	0	26	26	11	10	5	11
1996–97	24	9	1	0	0	34	34	29	5	0	20
1997–98	32	14	1	0	0	47	47	22	25	0	37
1998–99	27	8	1	0	0	36	36	33	3	0	21
1999–00	18	6	0	0	0	24	24	15	9	0	15

Table 2 Unit 9 beaver, lynx, otter and wolverine harvests percent^a chronology by month, 1995–2000

Regulatory year	Harvest periods						
	Sep–Oct	Nov	Dec	Jan	Feb	Mar	Apr–May
<u>Beaver</u>							
1995–96	0	0	4	54	28	14	
1996–97	0	0	2	63	30	4	
1997–98	0	0	14	38	29	19	
1998–99	0	0	0	41	34	15	9
1999–00	3	3	0	51	40	3	4
<u>Lynx</u>							
1995–96	0	5	30	45	20	0	
1996–97	0	7	7	27	60	0	
1997–98	0	0	21	47	32	0	
1998–99	0	0	21	47	32	0	
1999–00	0	3	45	45	6	0	0
<u>Otter</u>							
1995–96	0	8	18	31	35	8	
1996–97	0	4	28	43	20	5	
1997–98	0	4	16	22	29	29	
1998–99	0	10	18	28	20	23	
1999–00	0	0	13	32	23	32	0
<u>Wolverine</u>							
1995–96	14	5	24	24	33	0	
1996–97	0	0	41	35	18	6	
1997–98	15	4	15	34	32	0	
1998–99	3	6	14	36	31	11	
1999–00	8	4	17	54	12	4	0

Table 3 Unit 9 beaver, lynx, otter and wolverine harvests percent by transportation method, 1992–2000

Regulatory year	Percent of harvest							Unk
	Airplane	Dogsled Snowshoes	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	
<u>Beaver</u>								
1995–96	0	0	16	12	18	1	29	24
1996–97	0	5	0	39	27	0	17	12
1997–98	7	5	3	30	13	0	13	29
1998–99	0	0	8	60	31	0	0	1
1999–00	3	0	1	12	79	0	3	3
<u>Lynx</u>								
1995–96	0	0	0	57	13	0	17	13
1996–97	3	0	0	28	9	0	16	47
1997–98	0	0	0	5	84	0	0	10
1998–99	0	0	0	87	11	0	2	0
1999–00	9	0	0	6	81	0	0	3
<u>Otter</u>								
1995–96	0	5	2	37	28	0	12	16
1996–97	1	0	0	27	52	0	13	7
1997–98	0	0	0	55	31	0	3	11
1998–99	0	8	5	28	45	0	0	13
1999–00	3	0	0	16	42	0	0	39
<u>Wolverine</u>								
1995–96	15	0	0	15	30	0	4	36
1996–97	6	0	0	18	59	0	12	5
1997–98	9	0	2	17	62	0	2	9
1998–99	6	0	0	14	64	0	6	11
1999–00	17	0	0	4	75	0	4	

SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
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JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 11 (13,257 mi²) and 13 (22,857 mi²)

GEOGRAPHIC DESCRIPTION: Nelchina and Upper Susitna Rivers, Wrangell Mountains

BACKGROUND

Historic harvest data are limited for furbearers in Units 11 and 13 prior to the initiation of sealing requirements. Wolverine and beaver sealing became mandatory in 1971, followed by lynx and land otter in 1977. Before sealing began, fur buyer reports gave minimal information on harvests, and bounty records provided harvest data only on wolverines. Little research on furbearer populations has been conducted in either unit until recently, and as a result, data pertaining to population densities, movements, and distribution of furbearers are limited. Other than harvest records, reports by hunters and trappers and field observations by department personnel are the only historic sources of information concerning furbearer abundance.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVE

To develop measurable objectives for management of furbearer populations

METHODS

Yearly trends in lynx abundance for both units were monitored by conducting track surveys within favorable lynx habitat. Twenty-six aerial transects (19 in Unit 13 and 7 in Unit 11) were established in 1988 for the purpose of conducting lynx track surveys on a yearly basis. Randomly selected aerial transects, each approximately 8 km long and 0.4 km wide, were flown in late winter.

Beaver, lynx, river otter, and wolverine pelts were sealed, and trappers interviewed at the time of sealing to obtain harvest statistics for these species. A trapper questionnaire survey provided additional harvest and relative abundance information on both sealed and unsealed furbearers.

In September 1995, small mammal trapping was initiated to develop a population abundance index in the Glennallen area. The objective was to develop a small mammal abundance index and determine if this information can be used to predict furbearer abundance based on prey

abundance. This work continued until the fall of the 1999. The trapping was conducted between Mileposts 110 and 162 along the Richardson Highway and at Milepost 186 of the Glenn Highway. During all 3 years removal trapping was implemented using Museum Special traps baited with peanut butter. All trapping was conducted from mid-to-late September. Habitats trapped include spruce forests (1995–99), mid successional fields (1995–97), mid aged aspen (1995–99), spruce/birch association (1997), and alder thicket (1995). During the first 2 years (1995–96), 20–40 traps were set for 3 nights in each of the various habitat types. Trapping intensity was increased to 100 traps for 3 nights in each habitat type in 1997. During all years trap spacing was approximately 10 meters. Traps were checked daily and the catch was recorded.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Beavers are considered abundant in both units. Although beaver cache surveys were not flown, frequent field observations of beaver ponds and food caches made during aerial big game surveys suggest beaver numbers were high. Trappers responding to the trapper questionnaire also consider beavers to be abundant on their lines and indicate that current population levels were similar to those reported in previous trappers' surveys.

River otters are common in both units but are not considered abundant. Trapper questionnaire results also suggest most trappers consider river otter to be common but not abundant on their lines. Most trapper questionnaire responders reported river otter numbers had not changed in recent years.

The lynx population increased in portions of Unit 11 and 13 during the last 4 years. Lynx track transects were not flown in 1994 but results from 1995 until 1998 show lynx numbers increased. Track surveys were not flown in 1999 due to poor snow conditions in March. Lynx were very abundant during the 1999–2000 trapping season, and record number of lynx were taken in both GMU 11 and 13 (115 and 425 respectively). This increase in lynx numbers was not expected since the historic 10-year cycle predicted a population low in 1997–98 after peaking in 1992. In fact, the lynx population in both units appeared to follow a traditional 10-year cycle, until this recent increase, peaking in 1972, 1982, and 1992. The lynx population did start to decline from 1993–95 based on harvest records. However, in 1994 the percent kittens in the harvest started to increase. By 1996 lynx harvests increased dramatically and lynx were considered more abundant than during the expected population peak in 1992. In terms of lynx abundance within cycles, the lynx cycles in both units since the 1960s have been of lower amplitude based on declining harvest trends and trapper reports.

Wolverines are considered abundant in the more remote mountainous regions of each unit but are scarce at lower elevations. Wolverines are the only furbearers for which density estimates are available for portions of Unit 13. A density estimate of 4.5 wolverine/1,000 km² was obtained during 1991 in the eastern Talkeetna Mountain portion of Subunit 13A (Gardner and Becker 1991) and 5.2 wolverines/1,000 km² by Golden (1996) five years later. These estimates were similar to the 5.2 wolverine/1,000 km² density obtained in the Chugach Mountains in Subunit

13D in 1987 (Becker and Van Daele 1988). These estimates were obtained in the spring after harvests and much of the overwinter mortality had occurred. Also, both were located in areas considered to be favorable wolverine habitat. Wolverine densities in less mountainous portions of the unit were considered much lower than in the areas surveyed. Consequently, extrapolation of the observed densities cannot provide an accurate unit-wide estimate unless adjustments are made for areas lacking in favorable habitat. Trappers responding to the trapper questionnaire also considered wolverine common on their lines but considered overall numbers stable. It appears that wolverine numbers may have increased slightly on some traplines located in favorable wolverine habitat, usually mountainous areas.

Marten numbers increased in Units 11 and 13 during the mid 1980s and peaked about 1988 and have fluctuated annually since. Abundance estimates are developed from the trapper questionnaire. Trappers with traplines located in favorable marten habitats reported marten to be abundant in 1995 and 1996 but in decline by 1997. In 1998 and 1999 marten were again abundant. Yearly fluctuations in marten numbers are thought to represent changes in production and/or survival of young due to food availability. Marten were the most economically important furbearers in Units 13 and 11 during this reporting period.

Trappers reported coyotes to be common or abundant, depending on the habitat type trapped. Overall coyote numbers are considered stable at this time. High coyote numbers occur along the many rivers found throughout the units. River bottoms appear to be favorable habitat for them. Productivity of the coyote population may decrease now that snowshoe hares are back to very low levels.

Trappers reported that fox were common and increasing in number on their lines. Fox are found in both units from forested lowlands to alpine tundra, but fox numbers appear to be more abundant in Unit 13 than in Unit 11.

Muskrat numbers are very low throughout both units. Muskrats were abundant during the early 1980s but their numbers declined dramatically during the mid 1980s. Results from the annual trapper questionnaire indicate trappers consider muskrats were either not present or scarce on their lines from 1993–1998. Recently more push-ups are being observed and trappers have indicated that muskrat numbers may be rebounding slightly.

Mink are reported common and the population stable on traplines of those individuals responding to the trapper questionnaire.

In Unit 13 and 11 hares have historically followed a 10-year cycle that varies in amplitude. Hare abundance within cycles has been lower each cycle since the 1972 high. The last predicted high was in 1992. In fact, after a low amplitude population peak in 1992, hare numbers did start to decline. However, in 1995 hare numbers started increasing again within pockets of favorable habitat. Results of snowshoe hare pellet transects conducted in Unit 11 and 12 by National Park Service biologists support this conclusion (Carl Mitchell, pers. commun.). Instead of a population low in 1997 or 1998 as predicted under a normal 10-year cycle, hare numbers were the highest they had been in 25 years in certain portions of Unit 13 and 11. Hare populations increased through 1999 and then began to decline. Reasons for increased hare abundance during a period of expected cyclic lows are unknown.

In September 1995, small mammal trapping was initiated to develop a population abundance index. The objectives were to participate in a statewide effort to document small mammal population trends and determine if an index of prey abundance could be used to predict furbearer population trends. This was the fifth year of this project. Trapping intensity during the fall of 1999 was lower than in previous years. Respective catch rates for 1995, 1996, 1997, 1998, and 1999 were 0.2 ($n = 61$), 0.05 ($n = 11$), 0.09 ($n = 106$), 0.04 ($n = 26$), and 0.05 ($n = 8$) catches per trap night. Trapping results indicate that small mammals were more abundant in 1995, declined in 1996, and increased slightly in 1997. Catch rates were lower in 1998 and 1999; however, only 2 habitat types were trapped and problems with malfunctioning traps and severe weather may have affected the catch rate. No obvious trends are evident from the data thus far, but continued monitoring of small mammals may prove useful in understanding the relationship between small mammal abundance and furbearers.

Distribution and Movements

Lynx distribution follows that of the spruce forest habitat in both units. During this reporting period lynx numbers were higher in Subunits 13C, B and A along the Copper, Gulkana, Gakona and Chistochina Rivers and in 13D along the Klutina and Tonsina River drainages. Lynx moved freely between units because the favorable habitat types are continuous. Dispersal of marked lynx from both the Kenai Peninsula and Yukon Territory into Unit 13 has been observed. These movements suggest immigration could be an important component of the cyclic increase in lynx in Units 11 and 13, and may contribute a number of animals to the population.

Wolverines are most abundant in mountainous habitats of the Chugach, Talkeetna, and Alaska Ranges in Unit 13 and the Chugach and Wrangell Mountains in Unit 11. Prior to the late 1970s, wolverines were reportedly more numerous near settlements and on the Lake Louise Flats than today. Gardner (1985) reported movement patterns for radiocollared wolverines in Unit 13. He observed that movements declined during the fall but increased again in February with the dispersal of juveniles into vacant habitat. Long-distance dispersal of a radiocollared wolverine out of the unit has been reported by Gardner (1985) and Golden (1997).

MORTALITY

Harvest

Seasons and Bag Limits. Beaver trapping season in Unit 13 was 10 October to 30 April during the 1994–95 season, but closed on 15 May starting in 1995–96. The bag limit was 30 beavers in 1994–95, but the bag limit was eliminated in Unit 13 beginning in 1995–96. In Unit 11 the season opened on 10 November and closed on 30 April, and the bag limit was 30 beavers per season throughout this reporting period.

The coyote and river otter trapping season in Units 11 and 13 was from 10 November to 31 March, with no bag limit. The coyote hunting season was from 1 September to 30 April, with a bag limit of 2 coyotes.

The red fox trapping season in Units 11 and 13 was from 10 November to 28 February with no bag limit. The red fox hunting season was from 1 September to 15 February with a bag limit of 2 foxes. Trapping season was lengthened to 10 November–28 February for weasels and mink

during the spring 1997 Board of Game meeting. Wolverine season was 10 November to 31 January. The two wolverine bag limit was dropped in 1997. Hunting season for wolverine was 1 September–31 January with a bag limit of one wolverine. The marten season was 10 November–31 December in 13E. The marten season in the remainder of Unit 13 and Unit 11 continues to be 10 November–28 February. String sealing was required for marten caught in 13E, and there was no bag limit throughout Unit 11 and 13. The muskrat trapping season was from 10 November to 10 June and there was no bag limit. The lynx trapping season was 15 December–10 January in 1995 and has been 1 December–15 February since that time, with no bag limit. Hunting season for lynx was 10 November–31 January with a bag limit of 2 lynx.

Hunter/Trapper Harvest. There were zero beaver reported harvested in Unit 11 during the last two trapping seasons (Table 1). Historically, the highest harvest was 56 beaver taken in 1985, but harvests have fluctuated appreciably between years. Recently, there has been little trapping effort for beaver in GMU 11.

Beaver harvest for Unit 13 is presented in Table 2. Harvests over this reporting period have been stable and averaged 215 beaver per year. This is the highest reported 5-year average since sealing records have been maintained. However, current harvest levels are below the historic peak with reported catches of 333 and 300 beavers in 1986 and 1987. Prior to liberalizing seasons, the beaver catch in Unit 13 averaged 92 (range 33-201) between 1972 and 1986. The percentage of kits in the harvest varied between 15% and 32% for the last 5 years

River otter harvests in Unit 11 varied from 0–12 during the last 5 years (Table 3). River otter harvests in this unit have historically been low, averaging only 4 animals per year (range 0-11) between 1977 and 1993. In Unit 13 the average reported harvest during the last 5 years was 31 otters (Table 4), down from the previous 5-year average of 44 otters per year. From 1977, when sealing of otters became a requirement, through 1992, the annual harvest averaged 25 otters (range 5-68) for Unit 13. Otter harvests by subunit in Unit 13 have fluctuated annually, and no subunit has consistently produced a higher percentage of the total take.

The lynx harvest for Unit 11 is presented in Table 5. Lynx harvests last peaked in 1991–92 with 107 lynx sealed, declined to 9 lynx in 1995–96 and then increased rapidly to 115 lynx sealed in 1999–00. The percentage of kittens in the harvest also increased (Table 5). The lynx harvest in Unit 13 increased to 200 lynx in 1996 following three years of decline from a cyclic high harvest of 130 lynx in 1992 (Table 6). The percentage of kittens in the harvest has been high over the last five years (Table 6). This increase in reproduction and harvests does not follow the expected population composition and harvest data during a typical 10-year cycle. The predicted 10-year cyclic low was about 1997 or 1998. The cycle peak in the early 1990s was lower than that observed in the 1980s. Historically Subunit 13D provides over half the total unit lynx harvest, but during this reporting period subunit 13C had the highest lynx harvests.

Wolverine harvests from Units 11 and 13 are presented in Tables 7 and 8, respectively. The wolverine harvest has been low in Unit 11 in 4 of the last 5 years. Except for a slight increase in 1996, the wolverine harvest in Unit 13 has remained stable since 1989. During the 1970s, wolverine harvests were much higher in both units than those currently observed. In the 1970s, the average yearly wolverine harvest in Unit 11 was 28, and in Unit 13 it was 86. The lowest wolverine harvest ever reported from Unit 11 has been 4 wolverines, which occurred during the

1995 and 1996 seasons. In Unit 13, the lowest take was 16 in 1988. Composition data showed males have consistently accounted for the majority of the harvest in both GMU 11 and 13. Harvest locations indicate most wolverine harvests occurred in the mountainous portions of both units, especially from the Chugach Range in 13D and 11 and portions of the Talkeetna and Alaska Ranges in 13A and E.

Marten harvest data are not obtained on a unit-wide basis. Sealing of marten has been required for 10 years in Subunit 13E. During this 5-year period the annual harvest from Unit 13E averaged 62 marten (range = 31–93). Males consistently predominated (range = 71–74%) in the harvest in all years. In the remainder of Unit 13 marten are the most important furbearers both in total harvest and value of furs sold, according to trapper survey responses.

Hunter/Trapper Residency and Trapper Success. Interest in beaver trapping in Unit 11 remains low: only 2–4 trappers reported taking beaver during the previous reporting period. During the last 3 years, only one beaver has been reported taken in Unit 11. Most trappers were local residents.

The number of trappers taking otter in Unit 11 varied from zero to five trappers. In Unit 13, an average (1995–99) of 15 trappers (range 10–19) reported an average yearly catch of 2.3 otters per trapper. These figures represent the highest otter trapping effort and harvest per trapper since the early 1980s. Trapping and snaring were the most important methods of take reported for otters taken in Units 11 and 13, although a few otter were reported shot in Unit 13.

In Unit 11 the number of lynx trappers dropped from 18, with an average catch of 5.9 in 1991 during the cyclic high, to only five, with an average catch of 1.8 lynx in 1995–96. Recently participation has rebounded to 11 trappers with an average catch of 8.6 lynx in 1998. In Unit 13, the number of trappers sealing lynx dropped 65%, from 61 in 1992 during the cyclic high to 21 in 1994; however, the catch per trapper increased from 2.1 to 3.7 lynx during this period. Since 1994 the number of trappers taking lynx has rebounded to 62 in 1999. Trapping and snaring are the most important harvest methods, but a few lynx are shot each year.

Three to six trappers take wolverine in GMU 11 annually. The number of trappers taking a wolverine in Unit 11 has been stable, averaging 4 per year for the reporting period. The catch per trapper has remained low over the last 15 years, usually one or two wolverine per trapper. In Unit 13, between 19 and 35 trappers catch wolverine each season and catch per trapper has remained stable throughout the reporting period. All but two of the wolverine taken in Unit 11 were trapped or snared (Table 7). In Unit 13 trapping or snaring were also the most important methods of take; however, shooting accounted for 17% of the take during the reporting period (Table 8).

Response to the trapper questionnaire was 60–70% for the past several years. Trapping effort was similar in all years; trappers reported an average of 12 weeks spent trapping. Those trappers who responded to the survey had an average of 13 years trapping their current lines, which averaged 45 miles in length. Most trappers averaged about 50 sets on their line, but 9 (21%) trappers reported setting over 100 traps.

Comments received from the trapper questionnaire center around concerns over recreational use of traditional trapping trails. Many trappers reported difficulty maintaining their lines during February and March due to snowmachiners, skiers, and others using the trails. Some reported traps and fur stolen. Late winter trail use has increased in recent years and is of serious concern to many trappers in Unit 13.

This year's questionnaire included questions regarding the recent louse infestation of wolves in the Matanuska-Susitna Valley and elsewhere. Trappers were very concerned about the spread of this louse to Unit 13. Few trappers reported catching wolves or coyotes having signs of infestation; however, 1 wolf previously infested was trapped in Unit 11. It had been captured by ADF&G near Wasilla during spring of 1999 when it was treated and released. This incident has created concern over the future of wolf trapping in the Copper River Basin. Trappers will have little incentive to trap wolves if their hides are of diminished value.

Harvest Chronology. The harvest chronology data for beaver in Unit 11 and 13 are presented in Tables 9 and 10, respectively. In Unit 11 harvests are very low and variable. In Unit 13 chronology data indicates most beaver are taken early or late in the season, with few trappers expending much energy trying to take beaver during January or February. The early part of the season has been popular because the ice is thinner and beaver meat is sought for trap bait and sled dog food. High harvests in March and later spring reflected increased trapper activity associated with longer days, moderating temperatures, and higher pelt quality.

Harvest chronology for otter in Unit 11 has not shown any particular pattern over the past 5 years due to the small number taken (Table 11). The Unit 13 harvest chronology also fluctuated, but it appeared that more otters are taken in the first 3 months of the season (Table 12).

Harvest chronology data for lynx in Unit 11 and 13 are included in Tables 13 and 14, respectively. Chronology data probably reflects access and trapping conditions due to weather and snow depth more than differences in trapper preference. Most trappers start setting traps for lynx as soon as the season opens or whenever snow conditions and freeze-up allow travel to traplines after opening day.

Tables 15 and 16 present chronology data for Units 11 and 13 wolverine harvest. Because the season is so short, the timing of the wolverine harvest, like lynx, probably reflects trapping conditions more than differences in trapping preference.

Transport Methods. The transportation methods most used by successful trappers were snow machines, dog sleds, snowshoes, skis and highway vehicles (Tables 17–24).

CONCLUSIONS AND RECOMMENDATIONS

Estimates of trapping pressure in Units 11 and 13 are compiled from the trapper questionnaire, sealing data and staff contact with trappers. Questions pertaining to trapping effort in the trapper questionnaire suggest fewer individuals are trapping and those that are, as a group, are getting older with a substantial number of years trapping experience in Units 11 and 13. The amount of effort expended by these individuals declined in the early 1990s but stabilized the last 2 years, as reflected by the number of sets made, length of traplines and weeks trapped. Although trapper

questionnaire responses suggest the price paid for fur really wasn't a factor for those still trapping, the price paid is most likely the major underlying contributing factor to the decline in the number of trappers. There is no question trapping pressure is currently much lower than in the 1980s. Fur prices generally remained low despite predictions of increased value. The top price for lynx was 125 dollars for taxidermy quality adults. Most lynx going to the fur market averaged \$60–100, much lower than during the last cycle in the 1980s when lynx averaged over 300 dollars. Marten prices are now below a 40-dollar average, a decline of over 50 percent from the 100 dollar average in the late 1980s. Prices paid for wolves have not varied appreciably for the last several years.

Beaver and otter catches in both Unit 11 and 13 were lower during this reporting period than the last, reflecting decreased demand and prices for these fur items. Beaver and otter populations are considered healthy. Both species are harvested over larger portions of both units. Trapping is not concentrated, with the possible exception of some highly visible roadside beaver colonies. Current harvest rates are considered sustainable.

Current harvests of fox, coyote, mink and weasels are lower than in previous years because of reduced trapping pressure and effort. This conclusion is based on responses to trapper questionnaires. A number of individuals reported either not trapping last year, or expending less effort than in previous years. The reason for the decline in trapping pressure and effort is linked to a weak fur market for long-haired furs. There were no overall population trends detected other than annual fluctuations in abundance for these species. Harvests of fox, coyote, mink and weasels are well within sustainable levels and no changes in trapping or hunting regulations are recommended.

Lynx numbers increased in both Unit 11 and 13 the last five years. This increase followed a rapid build-up of hares within portions of these two units. Harvest data indicate increased lynx reproduction during the last five years, based on the percentage of kittens in the take. This observed increase in lynx does not follow the expected population trend based on the traditional 10-year population cycle. If they had followed the predicted population trend, lynx would have been at or near their cyclic low in 1998. The traditional lynx and hare cycles have changed for unknown reasons.

In Unit 13 lynx are managed by a tracking harvest strategy (THS). Season lengths are adjusted during the various stages of the lynx cycle in an attempt to control the harvest. The lynx harvest objective under the THS is to reduce the catch of lynx after the beginning of the cyclic decline to keep the population from being pushed even lower by high harvests. When lynx are abundant and producing kittens, the season is lengthened. Reproduction is monitored by assessing the percentage of kittens in the harvest. Abundance is monitored by trapper questionnaires, harvest records and trend counts. Harvest summaries and population trend estimates are completed by 15 March each year. Determination of season dates for the following year is completed by 20 April and included in the next year's trapping regulation book.

Wolverine numbers appear to be stable in 13A during this report period. Wolverine censuses were not repeated in 13D. Trapper reports suggest wolverine numbers are stable in mountainous areas; however, numbers remain low in forested habitats at lower elevations in Unit 13. Management objectives included attempting to increase wolverine numbers, promoting increased

use of lowland habitats. Management actions over the past 10 years include shortening the season and creating a bag limit of 2 wolverines. These were not successful in increasing wolverine numbers on the forested lowlands. Lack of food resources for wolverine on the Lake Louise Flats is the most likely limiting factor. Dispersing radio-collared wolverines have moved to other mountainous habitats and have not remained on the forested lowlands of the Lake Louise Flats. I believe the management objective to increase wolverine numbers on the Flats may not be biologically feasible.

Wolverine harvests in Unit 13 were stable over this reporting period and well below peak harvests of the early 1980s. Important harvest areas include the Chugach Range in Unit 13D along the Richardson Highway and the eastern Talkeetnas in Unit 13A. In heavily-trapped portions of the eastern Talkeetnas in Unit 13A, marked wolverine had an average harvest rate of 8% over a 4-year period in the mid 1990s (Golden 1997). A sustainable harvest rate for wolverines in Unit 13 is believed to be from 4–15% of the fall population (Gardner et al. 1993). Because current harvest rates appear to be sustainable, and the objective of increasing wolverine in lowland areas is questionable, I recommend maintaining the current season length.

Marten are considered the most important furbearer to individuals currently trapping in Units 11 and 13, although pelt prices dropped by over 50% from the \$100 averages of the late 1980s. Trapping effort for marten declined because marten averaged only \$40 in 1996. Marten numbers increased in both units during the 1980s. Responses to the trapper questionnaire suggest marten numbers are currently lower because of normal fluctuations in the food supply or predation. Current harvest levels for marten are considered to be sustainable. The decline in trapping effort, because of lower prices paid for marten over the last 5 years, has increased the size of refugia that should help the marten population to increase more rapidly once the prey base is sufficient. Because marten are such an important furbearer in Unit 13, management efforts should be maintained to monitor population trends and quantify the harvest. The trapper questionnaire should continue to ask how many marten each trapper takes every year. Although the questionnaire is voluntary and, undoubtedly, some trappers will avoid listing their catch, it appears enough trappers comply to make these data worthwhile. I would recommend aligning the Subunit 13E marten season with the remainder of Unit 13. The annual harvest of 30–90 marten from Subunit 13E is biologically insignificant to the population. The shortened season is unnecessarily restricting opportunity in 13E.

LITERATURE CITED

- BECKER, E. AND L. VAN DAELE. 1988. Wolverine density estimate in Unit 13. Unpublished Report. Alaska Department of Fish and Game. Anchorage.
- GARDNER, C. L., AND E. F. BECKER. 1991. Wolf and wolverine density estimation techniques. Federal Aid in Wildlife Restoration Research Progress Report. Project W-23-4. Alaska Department of Fish and Game. Juneau. 8pp.
- GARDNER, C. L. 1985. The ecology of wolverines in south central Alaska. M.S. Thesis, University of Alaska, Fairbanks. 82 pp.

———, M. E. McNAY, AND R. TOBEY. 1993. Estimates of wolverine densities and sustainable harvests in the Nelchina Basin in southcentral Alaska. Unpubl Rep *In* Abstracts, 7th Northern Furbearer Conference; April 22–23, Whitehorse, Yukon. 33pp.

GOLDEN, H. N. 1996. Federal Aid in Wildlife Restoration Research Progress Report, Project W-24-3. Alaska Department of Fish and Game. Juneau. 9pp.

———. 1997. Federal Aid in Wildlife Restoration Research Progress Report, Project W-24-5. Alaska Department of Fish and Game. Juneau. 8pp.

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Please cite any information taken from this section, and reference as:

Tobey, B. 2001. Unit 11 & 13 furbearer management report. Pages 132–153 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 11 beaver harvest, 1995–2000

Regulatory Year	Reported Harvest				Method of Take				
	Adult	Juv.	(%) ^a	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	13	5	(28%)	18	18	(100%)	0	(0%)	0
1996–97	22	2	(8%)	24	24	(100%)	0	(0%)	0
1997–98	0	0	(0%)	0	0	(0%)	0	(0%)	0
1998–99	0	0	(0%)	0	0	(0%)	0	(0%)	0
1999–00	1	0	(0%)	1	1	(100%)	0	(0%)	0

^a Beaver < 52”

Table 2 Unit 13 beaver harvest, 1995–2000

Regulatory Year	Reported Harvest				Method of Take				
	Adult	Juv.	(%) ^a	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	225	47	(17%)	272	270	(99%)	2	(1%)	0
1996–97	173	60	(26%)	233	233	(100%)	0	(0%)	0
1997–98	153	38	(20%)	191	191	(100%)	0	(0%)	0
1998–99	160	29	(15%)	189	189	(100%)	0	(0%)	0
1999–00	129	60	(32%)	189	189	(100%)	0	(0%)	0

^a Beaver < 52”

Table 3 Unit 11 otter harvest, 1995–2000

Regulatory Year	Reported Harvest					Method of Take				
	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	8	(67%)	4	0	12	12	(100%)	0	(0%)	0
1996–97	6	(67%)	3	0	9	9	(100%)	0	(0%)	0
1997–98	0	(0%)	0	0	0	0	(0%)	0	(0%)	0
1998–99	0	(0%)	0	1	1	0	(0%)	0	(0%)	1
1999–00	0	(0%)	0	0	0	0	(0%)	0	(0%)	0

Table 4 Unit 13 otter harvest, 1995–2000

Regulatory year	Reported Harvest					Method of Take				
	Males	(%)	Females	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	28	(61%)	18	12	58	55	(95%)	3	(5%)	0
1996–97	12	(67%)	6	20	38	37	(97%)	1	(3%)	0
1997–98	14	(54%)	12	1	27	25	(93%)	2	(7%)	0
1998–99	5	(63%)	3	6	14	13	(93%)	1	(7%)	0
1999–00	7	(88%)	1	13	21	21	(100%)	0	(0%)	0

Table 5 Unit 11 lynx harvest, 1995–2000

Regulatory Year	Reported Harvest				Method of Take				
	Adult	Juv.	(%) ^a	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	6	3	(33%)	9	9	(100%)	0	(0%)	0
1996–97	29	8	(22%)	37	36	(97%)	1	(3%)	0
1997–98	31	17	(35%)	48	48	(100%)	0	(0%)	0
1998–99	60	25	(26%)	95	93	(98%)	2	(2%)	0
1999–00	91	24	(17%)	115	113	(99%)	1	(1%)	1

^a Lynx \leq 34" in length.

Table 6 Unit 13 lynx harvest, 1995–2000

Regulatory Year	Reported Harvest				Method of Take				
	Adult	Juv.	(%) ^a	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	40	31	(44%)	71	67	(94%)	4	(6%)	0
1996–97	133	63	(32%)	200	176	(88%)	6	(12%)	18
1997–98	227	148	(40%)	379	367	(98%)	9	(2%)	3
1998–99	179	65	(27%)	244	245	(100%)	0	(0%)	0
1999–00	317	106	(25%)	425	391	(98%)	6	(2%)	28

^a Lynx < 34" in length.

Table 7 Unit 11 wolverine harvest, 1995–2000

Regulatory Year	Reported Harvest						Method of Take				
	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	3	(75%)	1	(25%)	0	4	4	(100%)	0	(0%)	0
1996–97	1	(25%)	3	(75%)	0	4	3	(75%)	1	(25%)	0
1997–98	16	(66%)	8	(33%)	0	24	24	(100%)	0	(0%)	0
1998–99	4	(57%)	3	(43%)	0	7	6	(86%)	1	(14%)	0
1999–00	4	(80%)	1	(20%)	0	5	5	(100%)	0	(0%)	0

Table 8 Unit 13 wolverine harvest, 1995–2000

Regulatory	Reported Harvest						Method of Take				
	Males	(%)	Females	(%)	Unk.	Total	Trap/snare	(%)	Shot	% Shot	Unk.
1995–96	20	(65%)	10	(32%)	1	31	27	(87%)	4	(13%)	0
1996–97	27	(61%)	17	(39%)	0	44	37	(84%)	7	(16%)	0
1997–98	21	(64%)	12	(36%)	1	34	26	(76%)	8	(24%)	0
1998–99	19	(63%)	11	(37%)	3	33	28	(85%)	5	(15%)	0
1999–00	19	(66%)	10	(34%)	2	31	26	(84%)	5	(16%)	0

Table 9 Unit 11 beaver harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods								
Year	October	November	December	January	February	March	April	Unknown	<i>n</i>
1995–96	--	0	0	78	0	22	0	0	18
1996–97	--	13	16	13	54	4	0	0	24
1997–98	--	0	0	0	0	0	0	0	0
1998–99	--	0	0	0	0	0	0	0	0
1999–00	--	0	0	0	1	0	0	0	1

Table 10 Unit 13 beaver harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods									
Year	October	November	December	January	February	March	April	May	Unknown	<i>n</i>
1995–96	38	30	19	5	3	4	0		1	272
1996–97	15	27	17	1	9	17	12		2	233
1997–98	97	38	34	3	1	7	6	3	2	191
1998–99	95	35	15	7	10	6	6	15	0	189
1999–00	98	30	2	1	7	7	21	17	6	189

Table 11 Unit 11 otter harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods							<i>n</i>
Year	November	December	January	February	March	April	Unknown	
1995–96	0	17	25	42	17	0	0	12
1996–97	33	44	0	22	0	0	0	9
1997–98	0	0	0	0	0	0	0	0
1998–99	100	0	0	0	0	0	0	1
1999–00	0	0	0	0	0	0	0	0

Table 12 Unit 13 otter harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods							<i>n</i>
Year	November	December	January	February	March	April	Unknown	
1995–96	17	29	24	28	2	0	0	58
1996–97	11	47	16	16	11	0	0	38
1997–98	22	7	33	33	4	0	0	27
1998–99	21	21	36	0	21	0	0	14
1999–00	14	57	5	0	24	0	0	21

Table 13 Unit 11 lynx harvest chronology percent by month, 1995–2000

Regulatory Year	Harvest periods						<i>n</i>
	October	November	December	January	February	March	
1995–96	0	0	33	56	11	0	9
1996–97	0	11	43	46	0	0	37
1997–98	0	0	15	39	46	0	48
1998–99	0	0	22	63	13	2	95
1999–00	0	1	24	48	27	0	104

Table 14 Unit 13 lynx harvest chronology percent by month, 1995–2000

Regulatory Year	Harvest Periods					<i>n</i>
	November	December	January	February	March	
1995–96	1	56	41	0	1	71
1996–97	2	62	35	0	1	200
1997–98	1	40	48	11	0	369
1998–99	0	43	43	13	1	244
1999–00	0	40	39	20	0	410

Table 15 Unit 11 wolverine harvest chronology percent by month, 1995–2000

Regulatory	Harvest Periods						<i>n</i>
Year	November	December	January	February	March	Unknown	
1995–96	0	50	50	0	0	0	4
1996–97	25	25	25	0	0	25	4
1997–98	0	13	83	0	4	0	24
1998–99	0	0	86	0	0	14	7
1999–00	0	40	60	0	0	0	5

Table 16 Unit 13 wolverine harvest chronology percent by month, 1995–2000

Regulatory	Harvest periods								<i>n</i>
Year	September	October	November	December	January	February	March	Unknown	
1995–96	3	3	10	45	35	0	0	3	31
1996–97	2	0	18	45	23	9	0	2	44
1997–98	15	3	12	26	44	0	0	0	34
1998–99	0	0	10	37	37	3	0	13	30
1999–00	6	0	6	26	58	0	3	0	31

Table 17 Unit 11 beaver harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	0	100	0	0	0	18
1996–97	0	0	0	0	71	0	0	29	24
1997–98	0	0	0	0	0	0	0	0	0
1998–99	0	0	0	0	0	0	0	0	0
1999–00	0	0	0	0	100	0	0	0	1

Table 18 Unit 13 beaver harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	2	4	16	6	31	0	34	8	272
1996–97	0	11	5	3	56	0	18	7	233
1997–98	5	9	0	0	51	0	65	1	191
1998–99	3	8	11	19	30	2	24	4	189
1999–00	0	15	3	6	12	0	65	0	189

Table 19 Unit 11 otter harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	0	100	0	0	0	12
1996–97	0	0	0	0	100	0	0	0	9
1997–98	0	0	0	0	0	0	0	0	0
1998–99	0	0	0	0	100	0	0	0	1
1999–00	0	0	0	0	0	0	0	0	0

Table 20 Unit 13 otter harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	7	0	2	72	0	7	12	58
1996–97	0	13	0	0	76	0	11	0	37
1997–98	0	15	0	0	70	0	4	11	27
1998–99	0	14	0	0	86	0	0	0	14
1999–00	0	5	0	0	90	0	5	0	21

Table 21 Unit 11 lynx harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	0	100	0	0	0	9
1996–97	0	0	0	0	97	3	0	0	37
1997–98	0	2	0	2	96	0	0	0	48
1998–99	0	9	0	0	91	0	0	0	95
1999–00	0	6	0	0	90	2	0	2	115

Table 22 Unit 13 lynx harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	1	80	6	13	0	71
1996–97	0	0	0	1	85	1	2	11	200
1997–98	4	0	0	0	91	0	3	2	379
1998–99	0	2	0	0	86	0	5	6	245
1999–00	0	2	0	0	80	0	10	8	425

Table 23 Unit 11 wolverine harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	0	0	0	0	100	0	0	0	4
1996–97	25	0	0	0	75	0	0	0	4
1997–98	0	13	0	0	87	0	0	0	24
1998–99	14	0	0	0	86	0	0	0	7
1999–00	0	20	0	0	80	0	0	0	5

Table 24 Unit 13 wolverine harvest percent by transport method, 1995–2000

Regulatory Year	Percent of Harvest								<i>n</i>
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
1995–96	6	0	3	3	77	0	6	3	31
1996–97	5	0	0	0	84	2	5	5	44
1997–98	6	0	0	8	68	6	12	0	34
1998–99	0	0	0	6	73	0	12	9	33
1999–00	0	0	0	6	80	0	13	0	31

SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 12 (10,000 mi²) and 20E (11,000 mi²)

GEOGRAPHIC DESCRIPTION: Upper Tanana, White, Fortymile, Ladue, and Charley River drainages

BACKGROUND

Historically, furbearer trapping has been an important part of the economy in eastern Interior Alaska. Between the early 1900s and 1920, trapping supplemented income of miners and Alaska Natives. The gold rush ended during the 1920s and most of the miners moved out of the Fortymile area. However, trapping still augmented incomes for many area residents. Today, the economy of the area is primarily seasonal. Trapping continues to provide for subsistence use and additional income for local residents. However, the number of trappers has declined since 1997 due to reduced fur prices.

Marten and lynx are the most economically important furbearers in Units 12 and 20E. During population highs, muskrats are also economically and culturally important in Unit 12. Beavers are an important subsistence resource to Northway residents but are lightly trapped in most of the area. Little trapping effort is expended on coyotes, red foxes, mink, river otters, ermine, red squirrels, or wolverines because of low pelt values, low abundance, or difficulty and expense of trapping. Wolves are discussed in a separate management report.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide an optimal harvest of furbearers.
- Provide the greatest opportunity to participate in hunting and trapping furbearers.

MANAGEMENT OBJECTIVES

- Maintain accurate annual harvest records based on sealing documents.

- As new research and management findings become available, develop specific population and harvest objectives for furbearers.

METHODS

HARVEST

We obtained annual harvest estimates from sealing certificates. Information collected during the sealing process included location, date, method of take, sex, and age (young-of-the-year or adult). Sealing of pelts was mandatory for wolverines, lynx, river otters, and beavers. Annual harvest estimates for beaver and otter included a subjective estimate of unreported take because some pelts were used in the trappers' homes and were not sealed. Harvest trend was also obtained from the Raw Fur Skin Export Report, a record of all furbearer pelts exported from Alaska. Harvest data were summarized by regulatory year (RY = 1 Jul through 30 Jun, e.g., RY99 = 1 Jul 1999 through 30 Jun 2000).

POPULATION STATUS AND TREND

We used several methods to obtain estimates of furbearer population abundance, trend, and distribution. These methods included 1) trapper interviews, 2) a statewide trapper questionnaire, and 3) field observations by Fish and Game personnel. The best information about overall furbearer abundance and trapping pressure was collected during interviews with long-term trappers and pilots. During 1995 through 1997, lynx and snowshoe hare population trends were monitored using an aerial survey technique (M McNay, ADF&G, unpublished data). We began monitoring snowshoe hare and lynx population trends and distribution again in winter 2000–2001. Lynx population trend was also assessed by evaluating age structure, pregnancy rate, and body condition of harvested lynx.

We estimated the proportion of kits in the harvest for beavers and lynx by using pelt measurements from the sealing certificates. Beaver pelts <53 inches (length plus width) (Buckley and Libby 1953) and lynx pelts <35 inches long (Stephenson 1988) were accepted standards for kits. Some overlap exists between pelt lengths of lynx kits and yearlings but I did not attempt to determine the extent of overlap.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Lynx

Based on track surveys, harvest data (Tables 1 and 2), and comments from area trappers, the last 2 lynx population cyclic highs in Units 12 and 20E occurred during 1990–1992 and 1997–1999. During these cycles, high kitten production was first reflected in the harvest 3–4 years prior to population highs. Kitten production remained high for 5 years during the early 1990s lynx cycle and for 6 years during the late 1990s lynx cycle. Years of high kitten production corresponded with years of high snowshoe hare numbers. The proportion of kittens in the harvest declined substantially in 1991 and 1992 in Units 12 and 20E, respectively. The lynx population declined to a low level in 1993. Snowshoe hare numbers began increasing in 1993, resulting in increased

lynx kitten production and survival beginning in 1994. Increased numbers of lynx were noticeable by 1995. The increasing phase in both snowshoe hare and lynx numbers were earlier than expected based on an historical 10-year cycle. Preliminary data suggest kitten production and survival were low in Units 12 and 20E during 2000 following a reduction in snowshoe hare numbers. Lynx numbers are expected to decline substantially in 2001.

Wolverine

Wolverines were abundant in Units 12 and 20E during the 1960s, corresponding to a period of high ungulate and wolf densities. According to the area's long-term trappers, the wolverine population decline during the 1970s and 1980s coincided with a decline in moose and caribou numbers. During RY97–RY99, wolverines were common only in the mountainous habitats of Unit 12. Unlike Unit 20E, large populations of ground squirrels inhabited this area. There were also high populations of Dall sheep, and small numbers of caribou and moose that ensured a stable amount of carrion available to wolverines. Ungulate carrion and ground squirrels are important foods for wolverines in other areas of Alaska (Gardner 1985). Based on trapper questionnaires and incidental observations, the wolverine population increased in other areas of Unit 12 due to the increased availability of carrion as a result of thousands of Nelchina caribou wintering throughout the unit between 1990 and 1997 and in Unit 20E likely due to the increasing Fortymile caribou herd and 15,000–25,000 Nelchina caribou wintering in the area since 1998.

Marten

Marten populations declined after reaching a high in 1987 and remained low through 1992. Beginning in 1993, trapper observations and incidental sightings by department personnel indicated the marten population increased in Units 12 and 20E. Marten were common in 1995 and 1996 but appeared to have declined in 1997. In 1997, they were common in localized areas but were uncommon in many areas of suitable habitat. Trappers who took most of the RY97 harvest reported taking few juveniles. Marten numbers have remained low through RY00. Factors that may have limited marten population growth were reduced microtine populations and increased avian predators. Observations by long-term trappers in eastern Alaska and adjacent Yukon Territory, Canada indicate that marten numbers decline when numbers of hares, lynx, and raptors are high (unpublished data). Low availability of microtines may affect marten natality rates and kit survival.

Incidental observations by department personnel and trappers indicate that microtine numbers increased and numbers of avian predators declined during RY00. Due to increasing prey base and declining predators, marten numbers are expected to increase during RY01.

Historically in Units 12 and 20E marten trapping contributed most of the income for area trappers. During RY97–RY99 that was still the case, but many trappers did not trap or reduced their trapping effort because of low marten availability and reduced raw fur price.

Red Fox

Trapper interviews, questionnaires, and incidental sightings by department personnel indicate fox numbers declined during 1993 and 1994 in both units. During those years, most of the foxes'

main prey populations were depressed (i.e., grouse, ptarmigan, snowshoe hares and microtines). Fox numbers increased substantially in 1995 and remained at high levels until fall 2001 due primarily to increased number of snowshoe hares. Fox numbers declined substantially during the winter of RY00 subsequent to the snowshoe hare decline. During RY97–RY99, there was little trapper demand for foxes because of the low market value.

Muskrat

The Northway–Tetlin Flats have been one of the most productive muskrat trapping areas in Alaska. Muskrat populations were high and were heavily trapped during the mid 1970s and mid 1980s. Between 1990 and 1992, muskrats were at low levels in both units and there was little trapper effort. Based on observations by trappers from Northway, muskrats seemed to increase in 1993 in the Northway Flats, and village residents increased trapping pressure. Extreme cold temperatures and lack of snow in 1995 and several years of drought subsequently caused the muskrat population to decline to low levels. Muskrat numbers remained low through 1999. During summer 2000, above normal rainfall caused high lake levels, and incidental sighting during aerial and ground surveys for other species indicated muskrat numbers increased throughout the lake systems in Units 12 and 20E.

Coyote

Coyote numbers increased in both units between the late 1980s and early 1990s and reached high numbers in certain areas, especially southeastern Unit 12. Coyotes declined following winter 1992 and have remained scarce throughout most of Units 12 and 20E. Based on trapper reports, coyote numbers increased in southeastern Unit 12 subsequent to the high snowshoe hare cycle during 1997–2000. Incidental sightings and trapper reports indicate coyote numbers declined during fall and winter 2000. There is little trapper demand for coyotes because of their low market value. Local residents have harvested high numbers of coyotes where they are abundant.

Beaver

During RY97–RY99 beavers were scarce to common in suitable lowland habitats in both units. Beaver numbers declined following severe freezing conditions during winter 1995. During late summer 1997, high water washed out many beaver houses located on rivers. Discussions with area trappers indicate subsequent beaver population growth was limited and remained at low levels. There was little trapper demand for beavers in Unit 20E. In Unit 12 many Northway trappers selectively trapped for beavers in the Northway Flats during spring.

Other Species

Trapper questionnaire results and sightings by area pilots and department personnel indicated that otters were uncommon in both Units 12 and 20E, and ermine and red squirrel were common and stable. Mink numbers seemed to have increased along the Tanana River but overall are scarce in both units. There was little trapper demand for these species. Trappers also were asked about prey species. Respondents listed hares as common during 1998 through spring 2000. Ptarmigan were common until spring 2000. All 3 grouse species declined substantially during 1999 and currently are at low levels. Microtines were thought to have declined during 1997 and

remained stable through 1999. Incidental reports indicate that microtine numbers increased during 2000.

MORTALITY

Harvest

Hunting Seasons and Bag Limits, Units 12 and 20E.

Coyote	1 Sep–30 Apr	10 coyotes
Red Fox	1 Sep–15 Mar	2 foxes
Lynx	1 Nov–31 Jan	2 lynx
Squirrel	No closed season	No limit
Wolverine	1 Sep–31 Mar	1 wolverine

Trapping Seasons and Bag Limits, Units 12 and 20E.

Beaver	1 Nov–15 Apr	15 beavers-Unit 12 25 beavers-Unit 20E
Coyote	15 Oct–28 Feb	No limit
Red Fox	1 Nov–28 Feb	No limit
Lynx	1 Dec–15 Feb	No limit ^a
Marten	1 Nov–28 Feb	No limit
Mink/Weasel	1 Nov–28 Feb	No limit
Muskrat	20 Sep–10 Jun	No limit
River Otter	1 Nov–15 Apr	No limit
Squirrel/marmot	No closed season	No limit
Wolverine	1 Nov–28 Feb	No limit

^a Lynx trapping season is determined annually based on lynx population trend.

Board of Game Actions and Emergency Orders. The Board of Game adopted a regulation during spring 1992 which allowed the department to annually set the lynx season independent of the board process for Interior Units 12, 20, and 25C. This action enhanced our ability to apply the lynx tracking harvest strategy (Stephenson 1988) that was adopted as board policy in 1987. That strategy was designed to protect lynx populations during the low part of the population cycle to allow for a more rapid and larger growth phase. In spring 1998 the Alaska Board of Game changed the coyote hunting bag limit to 10 coyotes, however no more than 2 could be taken before 1 October. In spring 2000 the board extended the lynx season in Units 12 and 20E to 15 March and changed the November bag limit to 5 lynx.

Hunter/Trapper Harvest.

Lynx — The lynx trapping seasons were adjusted annually by emergency orders issued by the department after evaluating current lynx and snowshoe hare population trends as part of the lynx harvest tracking system. The lynx trapping season was 1 December–15 February in RY97, 1 December–28 February in RY98 and RY99, and 1 November–15 March in RY00.

During RY97–RY99, the lynx harvest in Unit 12 ranged from 221 to 353 (Table 1), exceeding any 3-year total since RY77. Lynx pelt prices have been low since RY91 and have not influenced harvest levels. The percentage of kittens in the harvest ranged between 19% and 29% and declined each year. The number of trappers who reported harvesting lynx during RY97 through RY99 was lower (\bar{x} = 33 successful trappers) compared to the last lynx population high during 1990–1992 (\bar{x} = 44 successful trappers) but their catch rate was more than twice as high (8.7 lynx/trapper compared to 4.1). The number of lynx trapped in December declined when the lynx season was lengthened in RY98 to include all of February. The longer season allowed trappers to be more relaxed in setting out their lynx lines, trap when days were longer, and possibly select for better fur quality compared to December (Table 3). Most trappers used snowmachines for transportation (83–92%; Table 4) and used leg-hold traps (65–93%) to catch lynx.

During RY97–RY99, 12–19 trappers reported taking 82–116 lynx (4.3–8.5 lynx/trapper) in Unit 20E (Table 2). This was comparable to harvest during the 1990–1992 lynx population high. The percentage of kittens in the harvest was 16–25%. Preliminary harvest data indicates the percentage of kittens in the RY00 harvest declined substantially. Most lynx were harvested with traps (55–71%). During RY97–RY99 the lynx season was extended to 28 February. Most harvest occurred in January; however, in RY98 the February harvest was similar to January's (Table 5). The primary transportation method was snowmachines (80–93%; Table 6).

The lynx decline following RY99 ends the first lynx cycle since implementing the tracking harvest strategy. It is difficult to determine the effects of this management program on Units 12 and 20E lynx numbers and harvest because we did not determine lynx population size during the past 2 population highs nor do we have methods to factor out other confounding variables such as habitat changes, snowshoe hare population trends, and trapper effort. If lynx harvest is used as an indicator, it would appear the strategy worked. In Unit 12 during the past lynx cycle, trappers enjoyed the highest catch during the 3 population peak years (898 lynx) since at least 1970. Also the lynx harvest during RY94–RY99 (low to high cycle) under the strategy was 1193 lynx compared to the harvest of 841 lynx during the previous cycle (RY86–RY92) when the seasons were much more liberal. Fur price was probably not a factor influencing the higher harvest because it had been low since 1992. Trapper effort does not appear to explain the difference, as fewer trappers reported taking more lynx during the cycle when the strategy was applied. These trends also hold true in Unit 20E but the harvest was lower due to less trapping pressure.

Before we begin to restrict seasons during the low phase of the next lynx cycle, I recommend we analyze the harvest data from the Interior units to which the tracking strategy was applied to see if there are any trends we can show trappers indicating the effects of the program. In general, trappers support the lynx tracking harvest strategy during the lynx population lows but have more difficulty understanding it when the lynx population begins to increase. We need to educate trappers about the benefits of the lynx tracking strategy so we will be assured of their continued support even if lynx prices go up while seasons are restricted. In doing so, we will maintain future trapper support for the lynx management program because trappers will understand that in exchange for reduced lynx trapping opportunity during the population lows and initial recovery phases they will likely have higher catches during the population highs.

Wolverine — During RY97–RY99, the wolverine harvest in Units 12 ranged from 18–30 and in 20E ranged from 3–8 (Tables 1 and 2). The Unit 12 harvest was the highest 3-year total during the past 14 years. Most of the harvest in Unit 12 occurred in mountainous areas along the western and southern boundaries. Fur price influenced several trappers to select for wolverines in this area. The wolverine harvest in Unit 20E has been relatively stable since 1986. Annual harvest was not concentrated in any specific geographic area, but a few wolverines were captured in most areas where trapping occurred. This indicated the wolverine population was distributed at low density across the area. Males composed 66% (range = 56–72%) and 67% (all 3 years combined) of the harvest during RY97–RY99 in Units 12 and 20E, respectively.

Beaver — Interest in beaver trapping varied during RY97–RY99 in Unit 12. Fur price was low but most of the harvest was by Northway residents who trapped beavers more for food and handicrafts than to sell raw (Table 1). Beaver harvest in Unit 20E is historically low (Table 2). Most harvest was along the Yukon River by residents of Eagle who use beavers as food or for making handicrafts.

Otter — Otter populations in both Units 12 and 20E were low due to a lack of suitable habitat. Trappers seldom selected for otters due to low fur prices and the difficulty of catching them. During the past 14 years, an average of 4 otters have been taken annually in Unit 12 (Table 1), and only 3 otters have been trapped in Unit 20E (Table 2).

HABITAT

Assessment and Enhancement

Prior to the mid 1990s, 30 years of strict fire suppression activities in Units 12 and 20E created an older, less diverse mosaic of habitats than would have existed under a natural fire regime. Lack of early-to-medium-aged seral habitats may have limited snowshoe hare and microtine numbers, and ultimately, lynx, marten, and other species. There are several large areas of medium-aged seral habitats created by wildfire in Unit 20E. Incidental sightings and trapping records indicate that snowshoe hare and lynx numbers were higher in these areas compared to the remainder of Unit 20E. Three prescribed burns totaling 96,000 acres were ignited in Unit 20E during 1998 and 1999 and over 300,000 acres burned in wildfires during 1999. These areas should become prime habitat for microtines within 5 years and snowshoe hares within 10 years and will ultimately benefit all furbearers. In Unit 12 about 97,000 acres burned in 1990 creating early succession habitat along the Tok River. Snowshoe hares and microtines were common in the burned area within 5–7 years. Foxes, coyotes, lynx, and marten have been observed and trapped within this area since 1997. Over 1000 acres of the Tok River valley is planned to be logged over the next 10 years. The Division of Wildlife Conservation is working with Division of Forestry in planning postlogging treatment to benefit wildlife habitat regeneration that should benefit furbearers.

The *Alaska Interagency Fire Management Plan* for the Upper Tanana area currently guides wildfire suppression activities. Under this plan, a more natural fire regime will be restored to the area and will eventually improve habitat heterogeneity. All land-managing agencies agreed to the plan. Having a more diverse mosaic of habitats should benefit all furbearer species.

CONCLUSIONS AND RECOMMENDATIONS

The management objective to maintain accurate annual harvest records based on sealing documents was met during RY97–RY99. The management objective to develop specific population and harvest objectives for furbearers as new research and management findings become available was also met.

Trapping is important to many local residents to supplement their income, obtain food, or obtain fur for handicrafts. Most of the local trappers have a long history of trapping in the area (\bar{x} = 19 years) and have developed extensive lines (\bar{x} = 50 miles) with 50 to 400 traps. The fur market primarily drives trapper effort. Local trappers are able to conserve the furbearer populations along their lines because other local trappers respect most established traplines and there is little use of the area by nonlocal trappers. Furbearer populations are heavily exploited along the road system, especially marten, lynx, and fox. Trappers consider public road corridors open lines, which has created intense competition and overexploitation in some areas especially during years of high fur prices.

Trapping effort was not directly measured. However, information collected from sealing data, trapper questionnaires, and discussions with area trappers indicated that trapping effort declined since 1997 due to low pelt prices. However, lynx harvest increased in Units 12 and 20E and wolverine harvest increased in Unit 12. The increase in wolverine harvest was due to several trappers selecting for wolverine due to wolverine's high market value. Lynx harvest increased substantially apparently due to a very high lynx population. The effect of the lynx tracking harvest strategy on the lynx population and harvest was not evaluated but high harvest levels indicate it may have been a benefit. Trapping pressure was low on wolverine, beaver, otter, muskrat, coyote, and fox during RY97–RY99.

In most years marten were the most sought after furbearer in both units. Low price and reduced marten numbers caused a reduction in trapper effort during RY97–RY99. Incidental observations during RY00 indicate that avian predators of marten declined and microtine populations increased. Therefore, I expect marten numbers to increase in Units 12 and 20E in 2001. There is no need for changes in the season length, bag limits, or methods and means of harvest.

Historically, lynx were trapped intensively during periods of high fur price and population highs in Units 12 and 20E. During RY97–RY99 lynx numbers were high in both units and the fur price was below normal. Incidental observations and trapper interviews indicate the snowshoe hare population declined substantially in spring 2000 and preliminary harvest data indicate few lynx kittens were available during the RY00 trapping season. I expect the lynx population to decline rapidly during 2001 and 2002 and the season length to be reduced in RY02. Prior to continuing the strategy for another lynx cycle, I recommend we discuss with the trappers the benefits and effects of the program to further evaluate their support.

Wolverines declined during the 1960s and were stable at low levels in both units throughout the 1970s and 1980s (Kelleyhouse 1990). Ungulate food resources for wolverine increased in Unit 20E and wolverine numbers appear to be increasing slowly. In Unit 12 wolverine numbers probably increased during the early to mid-1990s due to the Nelchina and Mentasta caribou herds wintering in the unit. Wolverine reproductive rates are dependent on food availability

(Magoun 1985). I believe wolverine numbers have increased because of increased food availability in both units. Most area trappers do not select for wolverines but will set for them if they see enough sign. Based on population trend and traditional trapping practices, further restricting the wolverine trapping seasons in Units 12 and 20E is not necessary.

All other furbearer populations were fluctuating within their historical levels and do not warrant changes in seasons and bag limits or methods and means.

LITERATURE CITED

- BUCKLEY JL AND WL LIBBY. 1953. Growth rates and age determination in Alaskan beaver. Transactions of the North American Wildlife and Natural Resources Conference. 20:495–507.
- GARDNER CL. 1985. The ecology of wolverines in southcentral Alaska. Thesis. University Alaska Fairbanks.
- KELLEYHOUSE DG. 1990. Unit 12 furbearer management progress report of survey–inventory activities. Pages 94–101 and 185–190 *in* SO Morgan, editor. Volume XX. Part XIV. Alaska Department Fish and Game. Federal Aid in Wildlife Restoration. Grant W-23-2. Study 7.0. Juneau, Alaska.
- MAGOUN AJ. 1985. Population characteristics, ecology, and management of wolverines in northwestern Alaska. Dissertation. University Alaska Fairbanks.
- STEPHENSON RO. 1988. Development of techniques for evaluating lynx population status in Alaska. Alaska Department Fish and Game. Federal Aid in Wildlife Restoration. Research Progress Report. Grant W-22-6. Study 7.13. Juneau, Alaska.

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Gardner, C. L. 2001. Unit 12 and 20E furbearer management report. Pages 154–175 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 12 beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex		Age		Trap/snare	Shot			L&S ^b	Unk				
	M	F	Unk	Juv ^a			Adults	Unk			Unreported	Illegal		
<u>Beaver</u>														
1986–1987	0	0	55	5	50	0	20	0	44	3	0	8	75	16
1987–1988	0	0	18	5	13	0	20	0	18	0	0	0	38	6
1988–1989	0	0	15	2	13	0	20	0	15	0	0	0	35	7
1989–1990	0	0	14	3	11	0	20	0	13	0	0	1	34	5
1990–1991	0	0	19	6	12	1	20	0	18	0	0	1	39	7
1991–1992	0	0	40	10	30	0	20	0	36	0	0	4	60	11
1992–1993	0	0	34	1	33	0	20	0	34	0	0	0	54	6
1993–1994	0	0	35	2	32	1	20	0	34	0	0	1	55	11
1994–1995	0	0	26	0	26	0	20	0	26	0	0	0	46	6
1995–1996	0	0	14	7	7	0	20	0	14	0	0	0	34	4
1996–1997	0	0	27	6	20	1	20	0	26	0	0	1	47	6
1997–1998	0	0	40	9	31	0	20	0	40	0	0	0	60	9
1998–1999	0	0	19	1	18	0	20	0	19	0	0	0	39	4
1999–2000	0	0	10	2	8	0	20	0	10	0	0	0	30	3
<u>Lynx</u>														
1986–1987	0	0	80	11	69	0	0	0	78	0	0	2	80	32
1987–1988	0	0	74	21	53	0	0	0	72	2	0	0	74	35
1988–1989	0	0	70	13	57	0	0	0	65	5	0	0	70	29
1989–1990	0	0	78	18	60	0	0	0	74	3	0	1	78	28
1990–1991	0	0	133	23	110	0	0	0	131	2	0	0	133	40
1991–1992	0	0	174	6	163	5	0	0	170	4	0	0	174	49
1992–1993	0	0	232	5	227	0	0	0	218	6	0	8	232	43
1993–1994	0	0	121	2	117	2	0	0	103	3	0	15	121	28
1994–1995	0	0	89	12	75	2	0	0	85	3	0	1	89	23
1995–1996	0	0	42	11	31	0	0	0	40	2	0	0	42	10
1996–1997	0	0	164	40	121	3	0	0	158	2	0	4	164	32
1997–1998	0	0	353	103	233	17	0	0	351	2	0	0	353	37
1998–1999	0	0	324	73	237	14	0	0	319	5	0	0	324	28
1999–2000	0	0	221	42	179	0	0	0	216	5	0	0	221	33

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age					Trap/snare	Shot	L&S ^b	Unk		
	M	F	Unk	Juv ^a	Adults	Unk	Unreported	Illegal						
<u>Otter</u>														
1986–1987	2	2	0	0	0	4	3	0	4	0	0	0	7	3
1987–1988	1	8	1	0	0	10	3	0	7	3	0	0	13	5
1988–1989	2	0	0	0	0	2	3	0	2	0	0	0	5	2
1989–1990	0	0	0	0	0	0	3	0	0	0	0	0	3	0
1990–1991	1	0	0	0	0	1	3	0	1	0	0	0	4	1
1991–1992	0	0	6	0	0	6	3	0	6	0	0	0	9	4
1992–1993	3	3	2	0	0	8	3	0	6	1	0	1	11	6
1993–1994	0	0	0	0	0	0	3	0	0	0	0	0	3	0
1994–1995	3	3	0	0	0	6	3	0	6	0	0	0	9	3
1995–1996	2	2	0	0	0	4	3	0	2	2	0	0	7	3
1996–1997	2	1	2	0	0	5	3	0	4	1	0	0	8	4
1997–1998	0	0	1	0	0	1	3	0	1	0	0	0	4	1
1998–1999	0	0	5	0	0	5	3	0	4	1	0	0	8	3
1999–2000	4	0	0	0	0	4	3	0	4	0	0	0	7	4
<u>Wolverine</u>														
1986–1987	18	14	0	0	0	32	0	0	27	2	0	3	32	15
1987–1988	13	5	1	0	0	19	0	0	18	0	1	0	19	12
1988–1989	9	5	0	0	0	14	0	0	10	4	0	0	14	8
1989–1990	8	4	0	0	0	12	0	0	10	0	0	2	12	11
1990–1991	13	1	0	0	0	14	0	0	14	0	0	0	14	8
1991–1992	16	10	1	0	0	27	0	0	25	2	0	0	27	16
1992–1993	9	5	0	0	0	14	0	0	14	0	0	0	14	10
1993–1994	15	3	3	0	0	21	0	0	19	2	0	0	21	15
1994–1995	12	9	0	0	0	21	0	0	21	0	0	0	21	12
1995–1996	4	3	0	0	0	7	0	0	6	1	0	0	7	7
1996–1997	8	2	1	0	0	11	0	0	11	0	0	0	11	8
1997–1998	13	4	1	0	0	18	0	0	18	0	0	0	18	11
1998–1999	18	8	0	0	0	26	0	0	24	2	0	0	26	15
1999–2000	17	12	1	0	0	30	0	0	27	3	0	0	30	13

^a Beavers ≤52"; lynx ≤35" in length.

^b L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.

Table 2 Unit 20E beaver, lynx, otter, and wolverine harvest, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex		Age		Trap/snare	Shot			L&S ^b	Unk				
	M	F	Unk	Juv ^a			Adults	Unk			Unreported	Illegal		
<u>Beaver</u>														
1986–1987	0	0	5	0	5	0	5	0	1	0	0	4	10	2
1987–1988	0	0	3	0	3	0	5	0	3	0	0	0	8	1
1988–1989	0	0	1	0	1	0	5	0	1	0	0	0	6	1
1989–1990	0	0	3	0	3	0	5	0	3	0	0	0	8	2
1990–1991	0	0	3	0	3	0	5	0	3	0	0	0	8	2
1991–1992	0	0	10	0	10	0	5	0	10	0	0	0	15	5
1992–1993	0	0	6	1	5	0	5	0	6	0	0	0	11	3
1993–1994	0	0	9	0	9	0	5	0	9	0	0	0	14	2
1994–1995	0	0	0	0	0	0	5	0	0	0	0	0	5	0
1995–1996	0	0	5	1	4	0	5	0	5	0	0	0	10	2
1996–1997	0	0	3	0	3	0	5	0	2	1	0	0	8	1
1997–1998	0	0	0	0	0	0	5	0	0	0	0	0	5	0
1998–1999	0	0	1	0	1	0	5	0	1	0	0	0	6	1
1999–2000	0	0	11	3	8	0	5	0	11	0	0	0	16	3
<u>Lynx</u>														
1986–1987	0	0	11	0	11	0	0	0	11	0	0	0	11	5
1987–1988	0	0	9	3	6	0	0	0	9	0	0	0	9	5
1988–1989	0	0	25	7	18	0	0	0	25	0	0	0	25	10
1989–1990	0	0	29	10	19	0	0	0	29	0	0	0	29	12
1990–1991	0	0	70	19	51	0	0	0	68	2	0	0	70	22
1991–1992	0	0	113	16	96	1	0	0	111	0	0	2	113	14
1992–1993	0	0	97	3	89	5	0	0	93	3	0	1	97	21
1993–1994	0	0	46	1	45	0	0	0	46	0	0	0	46	11
1994–1995	0	0	23	3	20	0	0	0	23	0	0	0	23	7
1995–1996	0	0	28	4	24	0	0	0	27	1	0	0	28	8
1996–1997	0	0	33	7	25	1	0	0	33	0	0	0	33	9
1997–1998	0	0	102	25	77	0	0	0	102	0	0	0	102	12
1998–1999	0	0	116	18	98	0	0	0	111	3	0	2	116	16
1999–2000	0	0	82	18	54	10	0	0	77	5	0	0	82	19

Species/ Regulatory year	Reported harvest						Estimated harvest		Method of take				Total harvest	Successful trappers/ hunters
	Sex			Age			Unreported	Illegal	Trap/snare	Shot	L&S ^b	Unk		
	M	F	Unk	Juv ^a	Adults	Unk								
<u>Otter</u>														
1986–1987 ^c														
1987–1988 ^c														
1988–1989 ^c														
1989–1990 ^c														
1990–1991 ^c														
1991–1992		1		0	0	1	0	0	1	0	0	0	1	0
1992–1993 ^c														0
1993–1994	1	0		0	1	0	0	0	0	1	0	0	1	1
1994–1995	1	0	0	0	0	1	0	0	1	0	0	0	1	1
1995–1996 ^c														
1996–1997 ^c														
1997–1998 ^c														
1998–1999 ^c														
1999–2000 ^c														
<u>Wolverine</u>														
1986–1987	5	5	0	0	0	10	0	0	8	0	0	2	10	9
1987–1988	5	2	0	0	0	7	0	0	5	0	0	2	7	6
1988–1989	1	0	0	0	0	1	0	0	1	0	0	0	1	1
1989–1990	10	4	0	0	0	14	0	0	14	0	0	0	14	11
1990–1991	3	1	0	0	0	4	0	0	4	0	0	0	4	4
1991–1992	5	4	0	0	0	9	0	0	8	0	0	1	9	7
1992–1993	3	2	0	0	0	5	0	0	5	0	0	0	5	5
1993–1994	7	3	0	0	0	10	0	0	10	0	0	0	10	5
1994–1995	4	3	0	0	0	7	0	0	7	0	0	0	7	5
1995–1996	3	1	0	0	0	4	0	0	4	0	0	0	4	4
1996–1997	6	0	0	0	0	6	0	0	5	1	0	0	6	6
1997–1998	4	0	4	0	0	8	0	0	8	0	0	0	8	6
1998–1999	6	1	0	0	0	7	0	0	5	2	0	0	7	5
1999–2000	2	1	0	0	0	3	0	0	3	0	0	0	3	3

^a Beavers ≤52"; lynx ≤35" in length.

^b L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.

^c No reported harvest.

Table 3 Unit 12 beaver, lynx, otter, and wolverine reported harvest^a chronology by month, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
<u>Beaver</u>							
1986–1987	0	7	7	2	7	26	6
1987–1988	0	9	0	0	0	7	2
1988–1989	0	6	2	0	2	5	0
1989–1990	0	9	1	0	0	4	0
1990–1991	0	1	0	1	9	6	1
1991–1992	0	4	4	0	1	9	18
1992–1993	0	7	6	1	0	10	5
1993–1994	0	13	4	0	3	3	5
1994–1995	0	0	0	2	2	17	5
1995–1996	0	0	2	0	1	7	0
1996–1997	0	2	4	3	7	11	0
1997–1998	0	0	2	4	3	31	0
1998–1999	0	0	0	0	0	12	7
1999–2000	0	0	0	0	0	3	0
<u>Lynx</u>							
1986–1987	0	7	46	27	0	0	0
1987–1988	0	0	34	34	1	0	0
1988–1989	0	2	34	25	2	0	0
1989–1990	0	3	51	23	0	0	0
1990–1991	0	4	36	90	0	0	0
1991–1992	0	33	58	79	4	0	0
1992–1993	0	45	78	71	32	0	0
1993–1994	0	1	47	56	2	0	0
1994–1995	0	0	49	37	0	0	0
1995–1996	0	0	12	30	0	0	0
1996–1997	0	1	87	73	0	0	0
1997–1998	0	1	97	161	94	0	0
1998–1999	0	3	71	109	141	0	0
1999–2000	0	1	34	95	89	2	0
<u>Otter</u>							
1986–1987	0	0	0	0	2	2	0
1987–1988	0	0	0	0	0	0	0
1988–1989	0	0	1	0	0	0	1
1989–1990	0	0	0	1	0	0	0
1990–1991	0	0	0	0	0	1	0
1991–1992	0	0	0	1	4	0	0
1992–1993	1	0	0	2	1	3	0

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
1993–1994	0	0	0	0	0	0	0
1994–1995	0	0	5	1	0	0	0
1995–1996	1	0	2	1	0	0	0
1996–1997	0	0	3	2	0	0	0
1997–1998	0	0	0	0	0	1	0
1998–1999	0	0	0	0	0	0	0
1999–2000	0	0	0	1	3	0	0
<u>Wolverine</u>							
1986–1987	0	1	2	5	9	4	0
1987–1988	4	1	1	4	4	0	0
1988–1989	0	1	1	4	4	0	0
1989–1990	0	1	3	6	0	0	0
1990–1991	0	1	3	4	6	0	0
1991–1992	1	2	6	8	10	0	0
1992–1993	0	2	4	3	5	0	0
1993–1994	1	1	2	7	10	0	0
1994–1995	0	2	2	10	7	0	0
1995–1996	0	1	1	1	3	1	0
1996–1997	0	0	1	1	8	1	0
1997–1998	0	3	3	7	5	0	0
1998–1999	2	1	6	4	13	0	0
1999–2000	1	0	7	7	15	0	0

^a Unknown not included.

Table 4 Unit 12 harvest percent by transport method, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
<u>Beaver</u>								
1986–1987	0	20	0	0	56	0	7	16
1987–1988	0	28	0	0	56	0	17	0
1988–1989	0	0	0	0	73	0	27	0
1989–1990	0	0	0	0	93	0	0	7
1990–1991	0	0	0	0	47	0	5	47
1991–1992	0	3	0	0	68	0	0	30
1992–1993	0	0	38	0	62	0	0	0
1993–1994	0	0	14	0	49	0	20	17
1994–1995	0	15	19	0	65	0	0	0
1995–1996	0	21	0	0	14	0	29	36
1996–1997	0	26	0	0	70	0	0	4
1997–1998	0	8	20	0	73	0	0	0
1998–1999	0	27	0	0	63	0	0	0
1999–2000	0	0	40	0	50	0	10	0
<u>Lynx</u>								
1986–1987	0	1	0	0	85	0	10	4
1987–1988	3	5	0	0	74	0	7	11
1988–1989	1	1	0	0	86	0	11	0
1989–1990	4	10	0	0	82	0	0	4
1990–1991	2	5	0	0	89	0	2	3
1991–1992	0	1	0	0	83	1	12	3
1992–1993	0	1	0	0	88	0	8	4
1993–1994	0	4	0	0	84	0	3	8
1994–1995	1	4	0	0	81	0	7	6
1995–1996	2	2	0	0	93	0	2	0
1996–1997	1	4	0	0	94	0	3	3
1997–1998	0	0	0	1	94	0	5	0
1998–1999	0	3	0	0	83	0	14	0
1999–2000	0	2	0	0	92	0	5	0

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
<u>Otter</u>								
1986–1987 ^a								
1987–1988 ^a								
1988–1989 ^a								
1989–1990 ^a								
1990–1991 ^a								
1991–1992	0	0	0	0	100	0	0	0
1992–1993	0	0	38	0	50	0	0	13
1993–1994 ^a								
1994–1995	0	0	0	0	100	0	0	0
1995–1996	0	0	0	25	75	0	0	0
1996–1997	0	0	0	0	100	0	0	0
1997–1998	0	0	0	0	100	0	0	0
1998–1999	0	0	0	0	80	0	20	0
1999–2000	0	0	0	0	75	0	25	0
<u>Wolverine</u>								
1986–1987	34	0	0	0	50	0	6	9
1987–1988	5	5	0	0	90	0	0	0
1988–1989	29	0	0	7	57	0	0	7
1989–1990	17	25	0	0	42	0	0	17
1990–1991	0	21	0	0	57	0	0	21
1991–1992	15	0	0	0	81	0	0	4
1992–1993	0	0	0	0	100	0	0	0
1993–1994	24	0	0	0	76	0	0	0
1994–1995	10	0	0	0	90	0	0	0
1995–1996	14	0	0	0	86	0	0	0
1996–1997	9	0	0	0	82	0	9	0
1997–1998	0	0	0	0	100	0	0	0
1998–1999	4	0	0	4	88	0	4	0
1999–2000	0	0	0	0	90	0	10	0

^a No reported harvest.

Table 5 Unit 20E beaver, lynx, otter, and wolverine reported harvest chronology by month, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
<u>Beaver</u>							
1986–1987	0	0	0	0	1	2	2
1987–1988	0	1	2	0	0	0	0
1988–1989	0	0	0	0	0	1	0
1989–1990	0	0	2	0	0	1	0
1990–1991	0	0	2	0	0	1	0
1991–1992	0	2	6	0	0	2	0
1992–1993	0	0	0	0	2	2	2
1993–1994	0	2	2	0	0	0	0
1994–1995	0	0	0	0	0	0	0
1995–1996	0	0	0	0	0	2	0
1996–1997	0	0	0	0	0	2	1
1997–1998	0	0	0	0	0	0	0
1998–1999	0	0	1	0	0	0	0
1999–2000	0	0	0	0	2	9	0
<u>Lynx</u>							
1986–1987	0	0	7	4	0	0	0
1987–1988	0	0	5	4	0	0	0
1988–1989	0	0	11	12	0	0	0
1989–1990	0	0	19	9	1	0	0
1990–1991	0	18	23	29	0	0	0
1991–1992	0	20	55	37	0	0	0
1992–1993	1	15	26	32	22	0	0
1993–1994	0	0	24	22	0	0	0
1994–1995	0	0	16	7	0	0	0
1995–1996	0	0	5	22	1	0	0
1996–1997	0	0	15	18	0	0	0
1997–1998	0	0	16	57	29	0	0
1998–1999	0	2	25	44	42	2	0
1999–2000	0	1	11	60	7	3	0
<u>Otter</u>							
1986–1987 ^a							
1987–1988 ^a							
1988–1989 ^a							
1989–1990 ^a							
1990–1991 ^a							
1991–1992	0	0	1	0	0	0	0
1992–1993 ^a							

Species/ Regulatory year	Harvest periods						
	Sep/Oct	Nov	Dec	Jan	Feb	Mar	Apr
1993–1994	0	0	1	0	0	0	0
1994–1995	0	0	1	0	0	0	0
1995–1996 ^a							
1996–1997 ^a							
1997–1998 ^a							
1998–1999 ^a							
1999–2000 ^a							
<u>Wolverine</u>							
1986–1987	1	3	2	3	1	0	0
1987–1988	0	0	0	4	2	0	0
1988–1989	0	0	0	0	1	0	0
1989–1990	0	1	6	7	0	0	0
1990–1991	0	0	1	2	1	0	0
1991–1992	0	1	3	4	1	0	0
1992–1993	0	1	0	0	5	0	0
1993–1994	0	0	1	6	3	0	0
1994–1995	0	0	3	3	1	0	0
1995–1996	0	0	3	0	1	0	0
1996–1997	0	0	1	1	4	0	0
1997–1998	0	1	2	1	4	0	0
1998–1999	1	0	4	0	2	0	0
1999–2000	0	0	1	0	2	0	0

^a No reported harvest.

Table 6 Unit 20E harvest percent by transport method, regulatory years 1986–1987 through 1999–2000

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
<u>Beaver</u>								
1986–1987	0	20	0	0	0	0	0	80
1987–1988	0	0	0	0	100	0	0	0
1988–1989	0	0	0	0	100	0	0	0
1989–1990	0	0	0	0	100	0	0	0
1990–1991	0	67	0	0	33	0	0	0
1991–1992	8	20	0	0	80	0	0	0
1992–1993	0	0	0	0	67	0	0	33
1993–1994	0	0	0	0	100	0	0	0
1994–1995	0	0	0	0	0	0	0	0
1995–1996	0	0	0	0	100	0	0	0
1996–1997	67	0	33	0	0	0	0	0
1997–1998 ^a								
1998–1999	0	0	0	0	100	0	0	0
1999–2000	0	0	0	0	100	0	0	0
<u>Lynx</u>								
1986–1987	0	18	0	0	64	0	0	18
1987–1988	0	33	0	0	67	0	0	0
1988–1989	12	24	0	8	48	0	8	0
1989–1990	0	45	0	0	48	0	7	0
1990–1991	0	7	0	0	83	0	1	9
1991–1992	25	4	0	0	66	0	0	5
1992–1993	8	2	0	1	96	0	0	1
1993–1994	9	0	0	4	85	0	2	0
1994–1995	26	0	0	0	74	0	0	0
1995–1996	4	0	0	0	92	0	4	0
1996–1997	9	0	0	0	91	0	0	0
1997–1998	18	0	0	0	80	0	2	0
1998–1999	4	0	0	0	93	0	3	0
1999–2000	1	1	0	0	91	0	6	0

Species/ Regulatory year	Harvest percent by transport method							
	Airplane	Dogsled, Skis, Snowshoes	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Unknown
<u>Otter</u>								
1986–1987 ^a								
1987–1988 ^a								
1988–1989 ^a								
1989–1990 ^a								
1990–1991 ^a								
1991–1992	0	0	0	0	100	0	0	0
1992–1993 ^a								
1993–1994	0	0	0	0	100	0	0	0
1994–1995	0	0	0	0	100	0	0	0
1995–1996 ^a								
1996–1997 ^a								
1997–1998 ^a								
1998–1999 ^a								
1999–2000 ^a								
<u>Wolverine</u>								
1986–1987	10	20	0	0	70	0	0	0
1987–1988	29	0	0	0	29	0	14	29
1988–1989	0	0	0	0	100	0	0	0
1989–1990	14	36	0	0	50	0	0	0
1990–1991	25	0	0	0	75	0	0	0
1991–1992	44	0	0	0	44	0	0	11
1992–1993	0	0	0	0	100	0	0	0
1993–1994	70	10	0	0	20	0	0	0
1994–1995	29	0	0	0	57	0	14	0
1995–1996	0	0	0	0	100	0	0	0
1996–1997	17	0	0	0	66	0	0	17
1997–1998	0	0	0	0	100	0	0	0
1998–1999	29	0	0	0	29	0	29	14
1999–2000	0	0	0	0	100	0	0	0

^a No reported harvest.

SPECIES
MANAGEMENT REPORT

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FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 14 (6,625 mi²)

GEOGRAPHIC DESCRIPTION: Eastern Upper Cook Inlet

BACKGROUND

Game Management Unit 14 is divided into 3 subunits, and contains more than half (over 310,000) of the people living in Alaska. The human populations in Anchorage and the Matanuska-Susitna valleys are the fastest growing in the state, with most development occurring in Units 14C and 14A. Most trapping in Unit 14 is low volume, and many resource users do not go far from established roads or trails. Fur trapping and hunting is prohibited or severely restricted in the western half of Unit 14C (the Anchorage bowl), therefore most consumptive use occurs in Units 14A and 14B.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide the opportunity to trap and hunt furbearers.
- Maintain an optimal sustained harvest of furbearers.

MANAGEMENT OBJECTIVES

- Develop measurable population objectives for all fur species.
- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.

Annual harvest standards used to evaluate long-term harvest levels are: land otter, 20; lynx, 12 (when the season is open); wolverine, 10; and beaver, 250 (Masteller 1993).

METHODS

Information on trapping conditions, trapper effort, and trends in fur abundance and distribution were collected using a questionnaire sent to Unit 14 trappers. Harvest data were collected for beaver, land otter, lynx, wolverine, and marten through sealing certificates. During sealing, data on age (for beaver and lynx) and sex (for land otter, lynx, marten, and wolverine) were collected when possible. The month, method of take, and mode of hunter/trapper transport were also recorded. Minimum harvest data for other species were collected voluntarily from trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers reported that most species were common or abundant during the reporting period. They reported muskrat were scarce in 1997–1998, and wolverine and lynx were scarce in 1998–1999 and 1999–2000. They reported the population size of prey species as common or abundant in all years.

No specific investigations of furbearer population size or composition were conducted during the reporting period. Due to sub-optimal weather and other commitments, the track transects in Units 14A and 14B were not surveyed from 1997–2000.

Distribution and Movements

Hare numbers increased notably in the mid to late 1990s, with a concurrent increase in lynx (Masteller 1997). Wolf numbers have increased in recent years as well, but trappers have not reported any declines in coyote or fox numbers.

MORTALITY

Trapping Seasons and Bag Limits.

Species	Season	Bag Limit
Beaver		
Unit 14A and B	Nov. 10–May 15	No limit
Unit 14C	Dec. 1–Apr. 15	20 per season
Coyote		
Unit 14A and B	Nov. 10–Mar. 31	No limit
Unit 14C	Nov. 10–Feb. 28	No limit
Red Fox		
Unit 14A and B	Nov. 10–Feb. 28	No limit
Unit 14C	Nov. 10–Feb. 28	1 per season
Lynx	Dec. 15–Jan. 15	No limit

Marten	Nov. 10–Dec. 31	No limit
Mink/Weasels	Nov. 10–Jan. 31	No limit
Muskrat	Nov. 10–May 15	No limit
Land Otter		
Unit 14A and B	Nov. 10–Mar. 31	No limit
Unit 14C	Nov. 10–Feb. 28	No limit
Squirrels/Marmots	No closed season	No limit
Wolverine	Nov. 10–Jan. 31	2 per season

Hunting Seasons and Bag Limits.

Species	Season	Bag Limit
Coyote	Sep. 1–Apr. 30	2 per season
Red Fox	Sep. 1–Feb. 15	2 per season
Lynx	Dec. 15–Jan. 15	2 per season
Wolverine	Sep. 1–Jan. 31	1 per season

Board of Game Actions and Emergency Orders. The hunting season for lynx and red fox was reinstated in Unit 14 starting in 1997–1998 due to increasing populations. The Board also extended the marten trapping season 3 weeks in 1997–1998 after the populations rebounded from low numbers in the late 1980s and early 1990s.

Hunter/Trapper Harvest. The harvest of beaver, otter, wolverine, and marten, decreased during the reporting period, although trapping conditions were reported as fair or good. Beaver populations throughout the unit are stable or increasing, yet the harvest has decreased in the past few seasons due to depressed fur prices (Table 1). Conversely, the otter harvest has been relatively high for the last 7 seasons bolstered by high pelt prices (Table 2). Despite a decreasing beaver harvest, both the number of juvenile beavers in the harvest and the average pelt size have been relatively constant the last several seasons (Figure 1).

The lynx harvest increased slightly but was well below the harvest standard level of 12 (Table 3). The lynx harvest has increased as animals from contiguous populations in Unit 13 disperse into unpopulated habitat in Unit 14. The wolverine harvest was above the harvest standard level of 10 only in 1997–1998 when 13 animals were taken (Table 4).

The average price for marten pelts dropped over 10 dollars per pelt in 1997–1998 yet we had the largest harvest on record (Table 5). The marten harvest is probably less market driven than species more difficult or time consuming to trap, such as beaver. Therefore, the harvest is probably an adequate index of population abundance. Lower harvests reflect decreased productivity/survival of marten in response to scarce prey species that fluctuate in abundance

across years. Unit 14 is generally considered marginal marten habitat due to the high level of human settlement disturbing continuous coniferous forests.

Information for the harvest of species that do not require sealing was inferred from trapper questionnaires. During the reporting period, the total harvest ranges for all respondents were: coyote, 10–17; red fox, 17–45; mink, 35–64; weasels, 18–27; muskrats, 10–94; and red squirrels, 0–17. Many trappers either do not receive or fail to return the questionnaires; therefore, these are minimum harvest totals.

In November and December 1998, trappers reported catching coyotes and wolves with lice (*Trichodectes canis*) between Willow and Talkeetna in the lower Susitna River valley. We attempted to treat coyotes and wolves within the general area using meat baits medicated with the drug ivermectin. Through examination of 36 coyotes from 14 trappers, we confirmed lice on 4 coyotes caught during the 1998–1999 season. Lice were also reported on wolves and coyotes during the 1999–2000 season but at a reduced frequency.

Harvest Chronology. Weather conditions, such as snow depth, freezing rain, and cold temperatures can determine trapping success by limiting human access and optimal trapping conditions. Variation in trapping conditions can be seen via the chronology of the harvest across years (Tables 6–10).

Transport Methods. Snow machine use is still the most popular transport means for trappers (Tables 11–15). However, beaver and otter trappers also used highway vehicles extensively. Aircraft use has increased in the last decade for wolverine trappers (Table 14) and non-mechanized travel methods, such as dogsledding, skiing or snowshoeing, have recently increased for marten trappers (Table 15).

Other Mortality

There were 3 beaver taken under nuisance permits in 1997–1998, 2 taken in 1998–1999, and in 1999–2000, 24 beaver were taken under nuisance permits. As in previous years, road/railroad maintenance personnel identified most problem areas where beavers have plugged culverts and flooded roadbeds. Lengthening of the beaver season in the mid 1990s has not alleviated the nuisance beaver problem. With healthy beaver populations, relatively low fur prices, and reduced trapping levels, nuisance complaints can be expected increase.

HABITAT

Approximately 37,000 acres of mature mixed birch/spruce forest burned in June 1996 during the “Miller’s Reach” wildfire, north and east of Big Lake in Unit 14A. Since then, there have not been any other fires or significant habitat disturbances.

CONCLUSIONS AND RECOMMENDATIONS

The lack of data on population density, composition, and productivity of furbearers makes it difficult to determine if harvests are optimal. Developing measurable population objectives for fur species through population size estimation is beyond the limits of our resources. Indirect survey techniques tested by Golden (1994) can be used as an index of abundance, and need to be

conducted yearly. An index will provide more precise information on population trends than sealing data, which often follows fur prices and trapping conditions rather than population trends.

Marten display relatively low productivity for a small mammal. There was an apparent over-harvest of marten in the Matanuska/Susitna Valley in the late 1980s that initiated a sealing program for the species in Units 14 and 16. Due to potentially high trapper density in this area, information taken at the time of sealing is important for successfully determining the health and status of the population. Often the sex of the animal is unrecorded at the time of sealing and trappers often do not accurately keep precise records of their harvest by sex and month. A relatively high proportion of females caught late in the season is an indication of an overharvest, and this trend has been seen in the last 2 years in Unit 14 (Figure 2). This trend is not definite because many sealed marten do not have sex distinguished and the harvest chronology is often uncertain. The percent of females in the harvest is the best available method for managers to assess the health of the population. I believe there needs to be a concerted effort by trappers and sealers to keep precise records in noting the sex of the animal and when it was taken. I suggest a "harvest log card" be sent to trappers to facilitate record keeping of their marten harvest.

LITERATURE CITED

- GOLDEN, H.N. 1994. Furbearer track count index testing and development. Federal Aid in Wildlife Restoration Progress Report Project W-24-2. Study 7.17. Juneau. 44pp.
- MASTELLER, M. A. 1993. Game Management Unit 14. Pages 132–146 *in* Abbott, S. M., ed. Furbearers, survey-inventory management report, July 1989–June 1991. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-3/4. Study 7.0. Juneau. 303pp.
- . 1997. Game Management Unit 14. Pages 144–167 *in* Hicks, M. V., ed. Furbearers, survey-inventory management report, July 1994–June 1997. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-24-3/5. Study 7.0. Juneau. 322pp.

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Please cite any information taken from this section, and reference as:

McDonough, T. 2001. Unit 14 furbearer management report. Pages 176–197 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 14 beaver harvest, 1987–2000

Regulatory Year	Reported harvest		Method of Take				Total	Successful Trappers/hunters
	Juv ^a	(%)	Adults	Trap/snare	Shot	Unk		
1987–88	29	(11)	237	233	0	33	266	--
1988–89	30	(15)	166	175	0	21	196	--
1989–90	41	(27)	113	135	0	19	154	39
1990–91	44	(28)	111	149	4	2	155	34
1991–92	36	(16)	185	206	4	15	225	37
1992–93	70	(28)	183	241	1	11	253	50
1993–94	43	(19)	187	219	1	10	230	61
1994–95	31	(21)	113	149	0	11	160	38
1995–96	51	(20)	203	279	3	0	282	59
1996–97	53	(20)	207	256	5	19	280	56
1997–98	48	(21)	179	197	0	46	243	43
1998–99	48	(26)	140	181	1	10	192	36
1999–00	35	(21)	129	147	2	24	173	33
Average	43	(21)	166	197	1	17	216	44

^a Beaver measuring ≤ 52 inches (length + width)

Table 2 Unit 14 land otter harvest, 1988–2000

Regulatory Year	Reported harvest			Method of Take			Total	Successful Trappers/hunters
	Male	Female	Unk	Trap/snare	Shot	Unk		
1988–89	3	4	1	8	0	0	8	8
1989–90	11	9	4	22	0	2	24	14
1990–91	1	7	2	8	2	0	10	7
1991–92	17	4	5	25	1	0	26	14
1992–93	5	3	5	9	0	4	13	7
1993–94	22	9	3	32	1	1	34	17
1994–95	16	12	2	29	0	1	30	14
1995–96	14	15	6	33	2	0	35	18
1996–97	14	13	12	39	0	0	39	14
1997–98	23	14	2	38	0	1	39	20
1998–99	11	15	7	33	0	0	33	8
1999–00	18	11	1	30	0	0	30	18
Average	13	10	4	26	1	1	24	13

Table 3 Unit 14 lynx harvest, 1987–2000

Regulatory Year	Sex Composition			Age Composition				Method of Take				Total	Successful Hunters/trappers
	M	F	(%)	Unk	Juv ^a	(%)	Ad	Unk	Trap/ Snare	Shot	(L&S) ^b	Unk	
1987–88 ^c	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0
1988–89 ^c	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0
1989–90 ^c	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0
1990–91	8	5	(38)	0	7	(54)	6	0	11	2	(0)	0	13
1991–92	4	3	(43)	8	2	(17)	10	3	14	1	(0)	0	15
1992–93	7	2	(22)	2	3	(30)	7	1	10	1	(0)	0	11
1993–94	3	4	(57)	3	0	(0)	7	3	7	1	(0)	2	10
1994–95 ^c	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0
1995–96 ^c	0	0	(0)	0	0	(0)	0	0	0	0	(0)	0	0
1996–97	0	3	(100)	0	1	(50)	1	1	3	0	(0)	0	3
1997–98	0	1	(100)	1	0	(0)	1	1	1	0	(0)	1	2
1998–99	1	0	(0)	3	0	(0)	2	2	2	1	(0)	1	4
1999–00	4	1	(20)	1	2	(50)	2	2	5	0	(0)	1	6
Average ^d	3	2	(48)	2	2	(25)	5	2	7	1	(0)	1	8

^a Lynx measuring < 34 inches in length.^b L&S (land and shoot) refers to animals taken by hunters the same day hunters were airborne.^c Season closed.^d For years when season open

Table 4 Unit 14 wolverine harvest, 1987–2000

Year	Reported Harvest				Method of Take				Total	Successful Trappers/hunters
	Male	Female	(%)	Unk	Trap/snare	Shot	(L&S) ^a	Unk		
1987–88	4	3	(43)	0	5	1	(1)	1	7	6
1988–89	6	4	(40)	0	10	0	(0)	0	10	5
1989–90	5	3	(37)	0	6	2	(0)	0	8	6
1990–91	9	7	(44)	0	16	0	(0)	0	16	10
1991–92	5	2	(28)	1	7	1	(0)	0	8	8
1992–93	4	5	(56)	0	7	2	(0)	0	9	9
1993–94	9	4	(31)	0	13	0	(0)	0	13	10
1994–95	3	2	(40)	0	5	0	(0)	0	5	5
1995–96	5	2	(28)	3	10	0	(0)	0	10	7
1996–97	4	5	(55)	0	9	0	(0)	0	9	6
1997–98	8	5	(38)	0	12	1	(0)	0	13	9
1998–99	4	1	(20)	1	4	2	(0)	0	6	6
1999–00	3	2	(40)	0	5	0	(0)	0	5	6
Average	5	3	(38)	0	8	1	(0)	0	9	7

^a L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.

Table 5 Unit 14 marten harvest, 1992–2000

Regulatory Year	Reported harvest			Method of Take			Total	Successful Trappers/hunters
	Male	Female	Unk	Trap/snare	Shot	Unk		
1992–93 ^a	5	1	0	6	0	0	6	2
1993–94	8	3	0	11	0	0	11	3
1994–95	10	8	10	18	0	10	28	5
1995–96	37	16	0	51	0	2	53	12
1996–97	70	32	0	102	0	0	102	12
1997–98	75	50	13	138	0	0	138	16
1998–99	32	25	5	62	0	0	62	14
1999–00	49	23	2	74	0	0	74	13
Average	36	20	4	58	0	1	59	10

^a Sealing not required prior to 1992–93 season.

Table 6 Unit 14 beaver harvest chronology by month, 1989–2000

Year ^a	Percent harvested										Unk	Harvest
	Jun– Aug ^b	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
1989–90	0	0	1	15	14	15	8	12	32	1	1	154
1990–91	0	2	1	8	4	4	27	26	19	1	6	155
1991–92	0	0	0	8	6	34	26	15	3	4	3	225
1992–93	0	1	9	11	13	9	6	32	14	0	3	253
1993–94	0	2	5	11	13	14	11	21	22	0	1	230
1994–95	4	1	0	4	12	14	19	7	32	0	4	160
1995–96	1	1	1	8	27	5	7	13	24	9	3	282
1996–97	2	2	1	4	12	4	20	19	19	8	9	280
1997–98	2	1	0	10	11	17	13	12	23	11	0	243
1998–99	3	1	0	24	10	7	2	26	21	7	0	192
1999–00	2	10	2	16	28	13	5	14	4	6	0	173

^a Information not collected prior to 1989

^b These are beaver taken on damage control permits

Table 7 Unit 14 land otter harvest chronology by month, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88	0	12	12	25	25	25	12	0	8
1988–89	0	0	17	50	0	0	12	12	8
1989–90	0	0	20	25	8	42	8	0	24
1990–91	0	0	20	10	20	30	20	0	10
1991–92	4	0	4	15	31	19	27	0	26
1992–93	0	0	0	46	23	15	15	0	13
1993–94	0	0	9	12	50	18	12	0	34
1994–95	0	0	3	20	20	33	20	3	30
1995–96	0	6	17	37	14	14	11	0	35
1996–97	0	0	20	23	23	23	10	0	39
1997–98	0	0	18	26	13	24	18	3	39
1998–99	0	0	19	19	29	19	13	0	33
1999–00	0	0	30	47	10	3	10	0	30

Table 8 Unit 14 lynx harvest chronology by month, 1987–2000

Regulatory Year	Percent of Harvest						Total Harvest
	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88 ^a	0	0	0	0	0	0	0
1988–89 ^a	0	0	0	0	0	0	0
1989–90 ^a	0	0	0	0	0	0	0
1990–91	0	38	62	0	0	0	13
1991–92	0	67	33	0	0	0	15
1992–93	0	73	27	0	0	0	11
1993–94	0	80	20	0	0	0	10
1994–95 ^a	0	0	0	0	0	0	0
1995–96 ^a	0	0	0	0	0	0	0
1996–97	0	0	100	0	0	0	3
1997–98	0	0	50	0	0	50	2
1998–99	0	25	0	75	0	0	4
1999–00	17	33	0	33	0	17	6

^a Season closed

Table 9 Unit 14 wolverine harvest chronology by month, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1987–88	0	0	0	43	14	14	29	0	7
1988–89	0	0	0	10	10	80	0	0	10
1989–90	12	0	25	0	63	0	0	0	8
1990–91	0	0	12	31	6	50	0	0	16
1991–92	0	0	12	25	25	38	0	0	8
1992–93	11	0	0	22	67	0	0	0	9
1993–94	0	0	0	31	69	0	0	0	13
1994–95	0	0	20	20	60	0	0	0	5
1995–96	0	0	30	50	20	0	0	0	10
1996–97	0	0	0	33	67	0	0	0	9
1997–98	8	0	8	31	54	0	0	0	13
1998–99	17	0	0	0	67	17	0	0	6
1999–00	0	0	0	41	60	0	0	0	5

Table 10 Unit 14 marten harvest chronology by month, 1992–2000

Year	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1992–93 ^a	0	0	50	50	0	0	0	0	6
1993–94	0	0	45	55	0	0	0	0	11
1994–95	0	0	64	32	4	0	0	0	28
1995–96	0	0	62	38	0	0	0	0	53
1996–97	0	0	70	30	0	0	0	0	102
1997–98	0	0	55	45	0	0	0	0	138
1998–99	0	0	39	61	0	0	0	0	62
1999–00	0	0	55	45	0	0	0	0	74

^a Sealing not required prior to 1992-93 season.

Table 11 Unit 14 beaver trapper transport methods, 1989–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1989–90 ^a	3	23	23	0	28	0	6	17	154
1990–91	0	32	0	1	43	0	17	6	155
1991–92	0	19	0	1	58	1	15	7	225
1992–93	0	1	8	5	47	0	20	19	253
1993–94	0	1	10	1	47	0	28	12	230
1994–95	0	9	25	5	21	0	24	16	160
1995–96	8	3	6	8	26	0	34	14	282
1996–97	1	1	5	6	49	0	25	12	280
1997–98	1	8	7	6	28	0	36	14	243
1998–99	0	18	1	5	47	0	28	1	192
1999–00	0	32	0	6	33	0	29	0	173

^a Information not collected before 1989

Table 12 Unit 14 land otter trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88	0	88	0	0	12	0	0	0	8
1988–89	0	25	0	0	25	0	38	12	8
1989–90	0	71	0	0	8	0	13	8	24
1990–91	0	60	0	0	0	0	40	0	10
1991–92	0	19	0	0	69	0	8	4	26
1992–93	0	8	0	0	54	0	8	30	13
1993–94	0	6	0	0	62	0	6	26	34
1994–95	10	0	0	0	60	0	20	10	30
1995–96	9	14	0	3	26	0	31	17	35
1996–97	5	10	0	3	56	0	18	8	39
1997–98	0	13	3	13	38	0	28	5	39
1998–99	0	21	3	0	48	0	27	0	33
1999–00	0	24	0	3	33	0	33	7	30

Table 13 Unit 14 lynx trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88 ^a	0	0	0	0	0	0	0	0	0
1988–89 ^a	0	0	0	0	0	0	0	0	0
1989–90 ^a	0	0	0	0	0	0	0	0	0
1990–91	0	15	0	0	31	0	8	46	13
1991–92	0	0	0	27	47	0	27	0	15
1992–93	0	9	0	36	45	0	0	9	11
1993–94	0	10	0	50	20	0	0	20	10
1994–95 ^a	0	0	0	0	0	0	0	0	0
1995–96 ^a	0	0	0	0	0	0	0	0	0
1996–97	0	0	0	67	33	0	0	0	3
1997–98	0	0	0	0	50	0	0	50	2
1998–99	0	0	0	50	0	0	50	0	4
1999–00	0	33	0	0	33	0	17	17	6

^a Lynx season closed

Table 14 Unit 14 wolverine trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88	57	14	0	0	14	0	14	0	7
1988–89	10	30	0	0	60	0	0	0	10
1989–90	12	38	0	12	0	0	38	0	8
1990–91	19	44	0	0	12	0	0	25	16
1991–92	38	0	0	12	25	0	0	25	8
1992–93	33	11	0	0	33	0	0	22	9
1993–94	31	0	0	8	54	0	0	8	13
1994–95	20	20	0	0	40	0	0	20	5
1995–96	40	0	0	10	40	0	0	10	10
1996–97	67	0	0	0	22	0	0	11	9
1997–98	31	0	0	8	54	0	8	0	13
1998–99	50	17	0	0	33	0	0	0	6
1999–00	40	0	0	0	60	0	0	0	5

Table 15 Unit 14 marten trapper transport methods, 1992–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1992–93 ^a	0	0	0	0	50	0	0	50	6
1993–94	0	0	0	0	91	0	9	0	11
1994–95	0	28	0	0	36	0	0	36	28
1995–96	0	7	0	15	11	0	26	40	53
1996–97	1	10	0	0	80	0	0	9	102
1997–98	0	38	0	2	51	0	2	7	138
1998–99	0	24	0	8	57	0	10	0	62
1999–00	0	43	0	0	54	0	3	0	74

^a Sealing not required prior to 1992–93 season

Figure 1 Unit 14 beaver harvest depicted by age group and average pelt size (length + width) across years, 1991-2000. (Juvenile beaver measure ≤ 52 inches). Harvest numbers are incomplete due to some beaver measurements unrecorded at time of sealing.

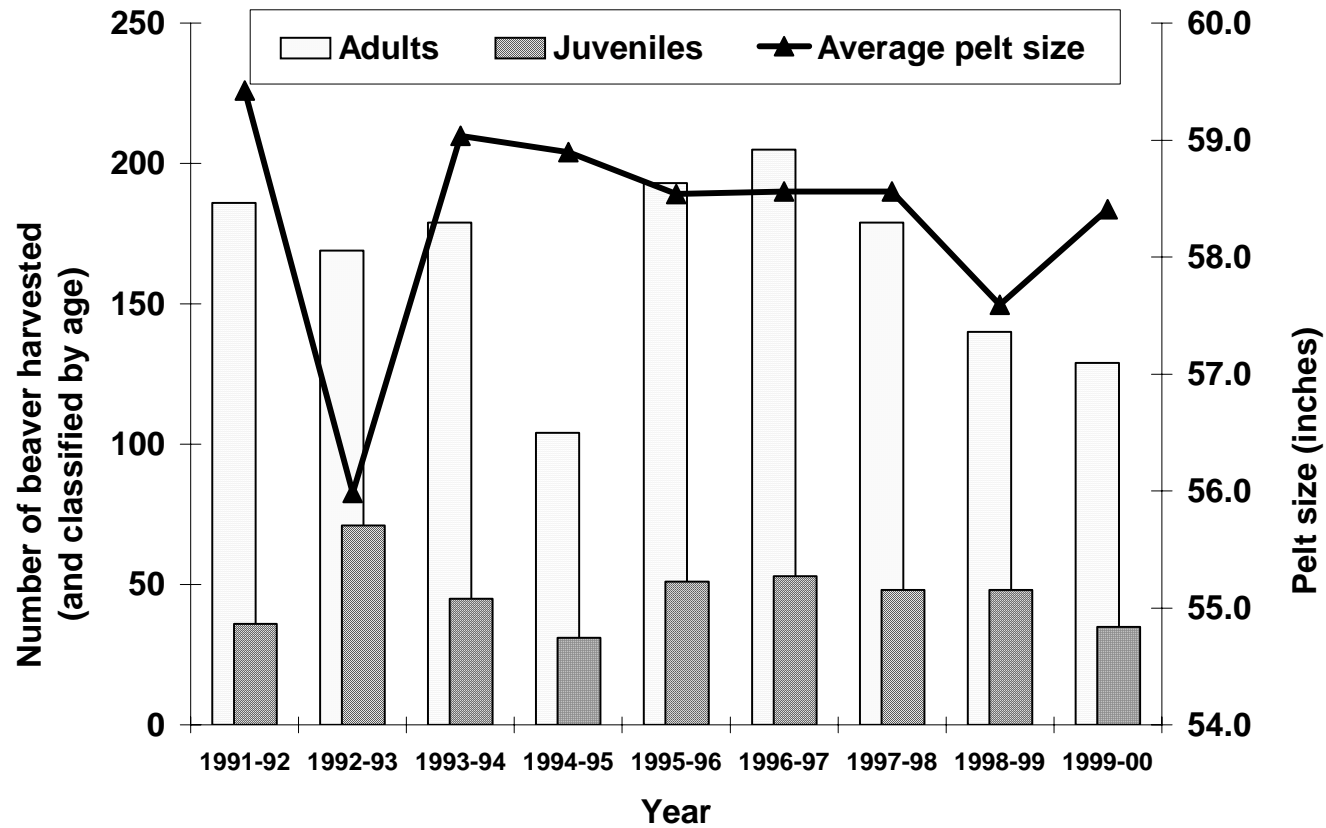
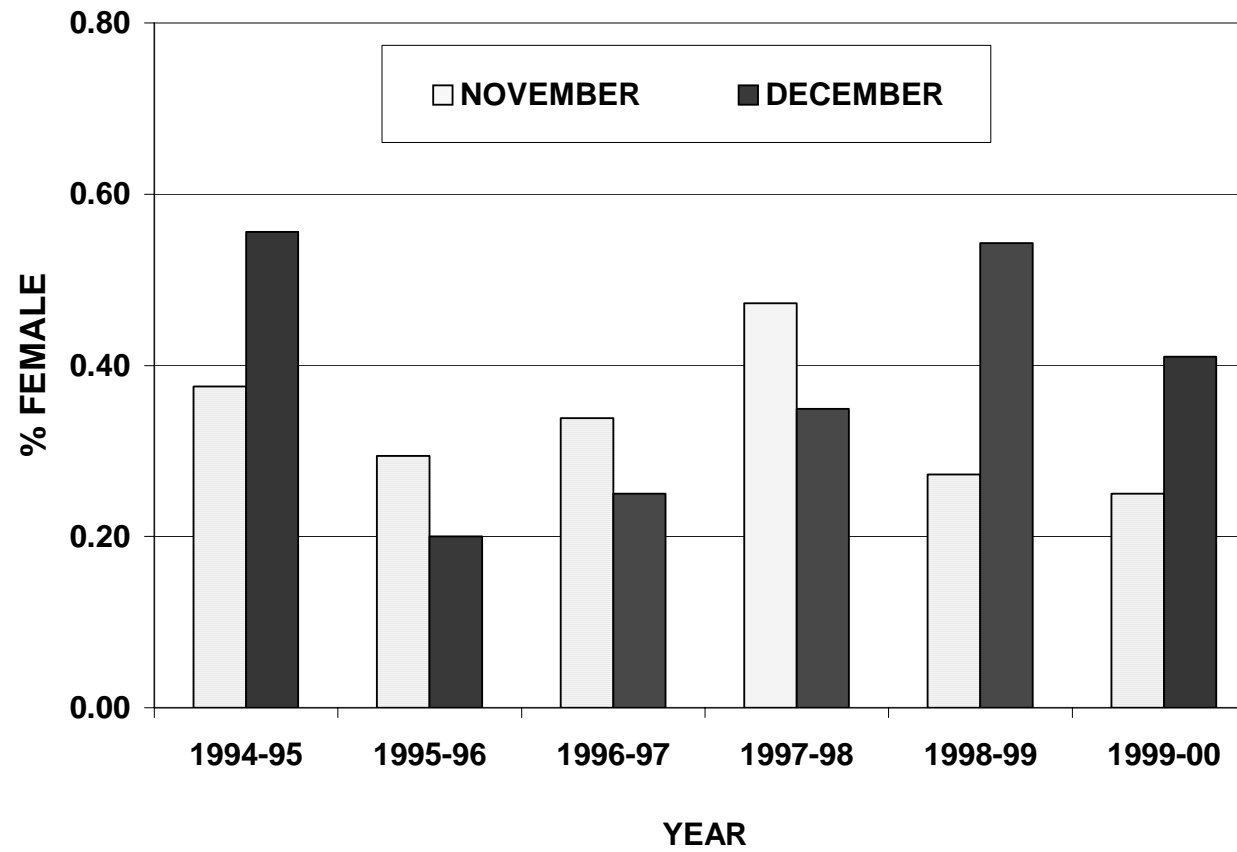


Figure 2 Percent female marten trapped over time in Unit 14, 1994–2000



SPECIES
MANAGEMENT REPORT

Alaska Department of Fish and Game
Division of Wildlife Conservation
(907) 465-4190 PO BOX 25526
JUNEAU, AK 99802-5526

FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 16 (12,225 mi²)

GEOGRAPHIC DESCRIPTION: West side of Cook Inlet

BACKGROUND

Game Management Unit 16, located west of the lower Susitna River and upper Cook Inlet, contains large areas of unaltered wildlife habitat. There have been no major wildfires since the 1950s, but hundreds of acres of white spruce have been killed in the last decade by a major spruce bark beetle infestation. Fishing and hunting lodges are scattered throughout the unit, many of which have winter caretakers who hunt and trap furbearers. There are maintained roads in the eastern and northern portions of Unit 16A, and near the settlements of Tyonek and Beluga in Unit 16B. Permanent residents live along the Parks Highway and the Petersville Road, and in the settlements of Skwentna, Beluga and Tyonek. Because of its proximity to Alaska's largest population centers, the area receives a large amount of year-round recreational use. A few local residents still actively trap full time to generate income, primarily from marten and beaver.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Provide the opportunity to trap and hunt furbearers.
- Maintain an optimal sustained harvest of furbearers.

MANAGEMENT OBJECTIVES

- Develop measurable population objectives for all fur species.
- Monitor annual harvest of furbearers using sealing forms, questionnaires, and trapper interviews.
- Implement track counts to form a long-term population index.

Annual harvest standards used to evaluate long-term harvest levels are: land otter, 40; wolverine, 20; and beaver, 350 (Masteller 1993).

METHODS

Information on trapping conditions, trapper effort, and trends in fur abundance and distribution were collected using a questionnaire sent to Unit 16 trappers. Harvest data were collected for beaver, land otter, lynx, wolverine, and marten through sealing certificates. During sealing, data on age (for beaver and lynx) and sex (for land otter, lynx, marten, and wolverine) were collected when possible. The month, method of take, and mode of hunter/trapper transport were also recorded. Minimum harvest data for other species were collected from information volunteered on trapper questionnaires.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Trappers reported that all species were common or abundant, except muskrat were scarce in 1997–1998, and wolverine and lynx were scarce in 1998–1999 and 1999–2000. Trappers reported the abundance of prey species as common or abundant in all years.

No specific studies investigating furbearer population size or composition were conducted during the reporting period. Due to sub-optimal weather and other commitments, the 2 track transects in Unit 16A were not surveyed from 1997–2000.

MORTALITY

Trapping Seasons and Bag Limits.

Species	Season	Bag Limit
Beaver (1997–98, 1998–99)	Nov 10–May 15	No limit
(1999–00)	Oct 10–May 15	No limit
Coyote	Nov 10–Mar 31	No limit
Red Fox	Nov 10–Feb 28	No limit
Lynx	Dec 15–Jan 15	No limit
Marten		
Unit 16A	Nov 10–Dec 31	No limit
Unit 16B	Nov 10–Jan 31	No limit
Mink/Weasels	Nov 10–Jan 31	No limit
Muskrat	Nov 10–Jun 10	No limit
Land Otter	Nov 10–Mar 31	No limit
Squirrels/Marmots	No closed season	No limit
Wolverine		
Unit 16A	Nov 10–Jan 31	2 per season
Unit 16B	Nov 10–Feb 28	No limit

Hunting Seasons and Bag Limits.

Species	Season	Bag Limit
Coyote	Sep 1–Apr 30	2 per season
Red Fox	Sep 1–Feb 15	2 per season
Lynx	Dec 15–Jan 15	2 per season
Wolverine		
Unit 16A	Sep 1–Jan 31	1 per season
Unit 16B	Sep 1–Mar 31	1 per season

Board of Game Actions and Emergency Orders. In response to increasing marten populations, the Board extended the marten trapping season 3 weeks in Unit 16A, and 4 weeks in the northern portion of 16B. These changes took effect on 1 July 1997. In 1999, the Board also extended the Unit 16 beaver season 1 month in the spring to allow more open water trapping opportunities. The hunting season for lynx in Units 14 and 16 was reinstated starting in the 1997–1998 season due to increasing populations.

Hunter/Trapper Harvest. Fur harvest fluctuates with trapping conditions, effort, and fur prices. Trapping conditions were described as fair or good during the reporting period. In general, fur prices have been stable or declining for most species during the reporting period. Most notable, the average pelt price for Alaska beaver has decreased over 30% in the last 3 seasons.

Beaver and otter harvests have increased since the early 1990s (Tables 1 and 2), but remain well below historical levels. The previous peak in harvest occurred during 1986–1987 when trappers took 651 beavers and 68 otters in Unit 16 (Masteller 1997). Beaver populations throughout the unit are stable or increasing, yet the harvest remains below objective levels due to depressed fur prices (Table 1). Conversely, the harvest of 42 otters in 1999–2000, bolstered by high pelt prices, was the highest harvest in the last decade (Table 2). Both the number of juvenile beaver in the harvest and the average pelt size have been relatively constant the last 4 seasons (Figure 1), indicating a stable adult/juvenile age structure in the population.

Lynx season opened in 1996–1997 after 2 closed seasons but subsequent harvests were low (Table 3). The lynx harvest has been historically low in Unit 16, reflecting a lack of good hare habitat. The wolverine harvest has consistently been around the 10-year average of 17 animals (Table 4). However, the 1999–2000 wolverine harvest of 29 was the highest in recent history (Table 4). The marten harvest has remained high since populations recovered from a decline in the early 1990s (Table 5).

Information for the harvest of species that do not require sealing was taken from trapper questionnaires. During the reporting period, the total harvest ranges were: coyotes, 0–4; red fox, 2–9; mink, 0–17; weasels, 5–73; muskrats, 0–6; and squirrels, 5–63. Many trappers either do not

receive or fail to return the questionnaires, therefore, these should be considered minimum harvest totals.

In November and December, 1998, trappers reported catching coyotes and wolves with lice (*Trichodectes canis*) between Willow and Talkeetna in the lower Susitna River valley. We attempted to treat coyotes and wolves within the general area using meat baits medicated with the drug ivermectin. Through examination of 36 coyotes from 14 trappers, we confirmed lice on 4 individuals caught during the 1998–99 season. Lice were also reported on wolves and coyotes during the 1999–2000 season.

Harvest Chronology. Weather conditions, such as snow depth, freezing rain, and cold temperatures can determine peak trapping success by limiting human access and optimal trapping conditions. Variation in trapping conditions can be seen via the chronology of the harvest across years (Tables 6–9). Historically, most beaver harvest occurred between February and April (Table 6), but trappers took advantage of the extra 2 weeks of beaver trapping in May 1996, and the 4 week extension in October 1999.

Transport Methods. Most Unit 16 trappers use snowmachines to access their trapping areas (Tables 10–13). The lack of roads in the unit limits the use of highway vehicles.

Other Mortality

There were 0, 4, and 0 beavers taken under nuisance permits in 1997–1998, 1998–1999, and 1999–2000, respectively. As in previous years, road/railroad maintenance personnel identified most problem areas where beavers have plugged culverts and flooded roadbeds. Two common problem areas are Oilwell Road in Unit 16A and the road system near Tyonek and Beluga in Unit 16B. With healthy beaver populations, relatively low prices, and reduced trapping levels, nuisance complaints can be expected increase.

HABITAT

There were no fires or other significant habitat disturbances in Unit 16 during the reporting period.

CONCLUSIONS AND RECOMMENDATIONS

The lack of data on population density, composition, and productivity of furbearers makes it difficult to determine if harvests are optimal. Developing measurable population objectives for fur species through population size estimation is beyond the limits of our resources. Indirect survey techniques tested by Golden (1994) can be used as an index of abundance, and need to be conducted yearly. An index will provide more precise information on population trends than sealing data, which often follows fur prices and trapping conditions rather than population trends.

Marten display relatively low productivity for a small mammal. There was an apparent over-harvest of marten in the Matanuska/Susitna Valley in the late 1980s that initiated a sealing program for the species in Units 14 and 16. Due to potentially high trapper density in this area, information taken at the time of sealing is important for successfully determining the health and

status of the population. Often the sex of the animal is unrecorded at the time of sealing and trappers often do not accurately keep precise records of their harvest by sex and month. A relatively high proportion of females caught late in the season is an indication of overharvest. The percent of females in the harvest cannot be effectively analyzed for Unit 16 because a large proportion of the sealed marten do not have sex distinguished and the harvest chronology is often uncertain. I believe there needs to be a concerted effort by trappers and sealers to keep precise records in noting the sex of the animal and when it was taken. The percent of females in the harvest is the best available method for managers to assess the health of the marten population.

LITERATURE CITED

GOLDEN, H.N. 1994. Furbearer track count index testing and development. Federal Aid in Wildlife Restoration Progress Report Project W-24-2. Study 7.17. Juneau. 44pp.

MASTELLER, M. A. 1993. Game Management Unit 14. Pages 132–146 *in* Abbott, S. M., ed. Furbearers, survey-inventory management report, July 1989–June 1991. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-23-3/4. Study 7.0. Juneau. 303pp.

———. 1997. Game Management Unit 14. Pages 144–167 *in* Hicks, M. V., ed. Furbearers, survey-inventory management report, July 1994–June 1997. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration Progress Report Project W-24-3/5. Study 7.0. Juneau. 322pp.

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Please cite any information taken from this section, and reference as:

McDonough, T. 2001. Unit 16 furbearer management report. Pages 198–216 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Unit 16 beaver harvest, 1987–2000

Regulatory Year	Reported harvest				Method of Take			Total	Successful Trappers/hunters
	Juv ^a	(%)	Adults	Unk	Trap/snare	Shot	Unk		
1987–88	0	--	0	394	0	0	394	394	---
1988–89	0	--	0	370	370	0	0	370	---
1989–90	22	(15)	123	0	145	0	0	145	16
1990–91	30	(17)	146	0	171	0	5	176	20
1991–92	32	(14)	192	4	209	5	14	228	30
1992–93	19	(21)	61	10	85	2	3	90	19
1993–94	16	(18)	71	0	87	0	0	87	15
1994–95	10	(15)	56	0	66	0	0	66	9
1995–96	7	(11)	56	2	65	0	0	65	9
1996–97	38	(24)	122	7	152	2	13	167	26
1997–98	28	(23)	93	2	121	2	0	123	14
1998–99	26	(24)	81	4	113	2	0	115	16
1999–00	40	(24)	129	1	173	0	0	173	21
Average ^b	24	(19)	98	3	126	1	3	130	18

^a Beaver measuring ≤ 52 inches (length + width).^b For 1989–90 through 1999–00

Table 2 Unit 16 land otter harvest, 1987–2000

Regulatory Year	Reported harvest				Method of Take			Total	Successful Trappers/hunters
	Male	Female	(%)	Unk	Trap/snare	Shot	Unk		
1987–88	0	0	(--)	51	0	0	51	51	---
1988–89	25	13	(34)	9	43	0	4	47	---
1989–90	5	4	(44)	11	18	1	1	20	8
1990–91	6	3	(33)	6	15	0	0	15	7
1991–92	9	7	(44)	3	15	3	1	19	10
1992–93	1	2	(--)	11	13	1	0	14	8
1993–94	13	16	(55)	2	30	1	0	31	12
1994–95	6	1	(14)	0	7	0	0	7	4
1995–96	6	7	(54)	3	14	2	0	16	5
1996–97	10	11	(48)	6	27	0	0	27	8
1997–98	14	7	(33)	3	24	0	0	24	10
1998–99	11	4	(26)	3	18	0	0	18	10
1999–00	22	17	(43)	3	42	0	0	42	17
Average ^a	11	8	(42)	9	22	1	4	26	19

^a For years when data available.

Table 3 Unit 16 lynx harvest, 1984–2000

Regulatory Year ^a	Reported Harvest						Method of Take					Successful		
	M	F	(%)	Un k	Juv ^b	(%)	Ad	Unk	Trap /Sna re	Shot	(L&S) ^c	Unk	Total	Hunter s/trapp ers
1984–85	0	0	--	1	0	--	0	1	0	0	(0)	1	1	---
1985–86	0	0	--	2	0	--	0	2	2	0	(0)	0	2	1
1986–87	0	6	(100)	0	0	--	0	6	0	0	(0)	6	6	---

1990–91	0	0	--	0	0	--	0	0	0	0	(0)	0	0	0
1991–92	0	0	--	1	0	(0)	0	1	1	0	(0)	0	1	1
1992–93	1	1	(50)	1	0	(0)	2	1	3	0	(0)	0	3	2
1993–94	1	2	(67)	1	0	(0)	4	0	2	1	(0)	1	4	3

1996–97	0	0	--	0	0	--	0	0	0	0	(0)	0	0	0
1997–98	0	1	(100)	0	0	(0)	1	0	1	0	(0)	0	1	1
1998–99	0	1	(100)	0	0	(0)	1	0	1	0	(0)	0	1	1
1999–00	3	0	(0)	0	2	(67)	1	0	3	0	(0)	0	3	2
Average ^d													2	1

^a Season closed during 1987–88, 1988–89, 1989–90, 1994–95 and 1995–96.

^b Lynx measuring ≤ 34 inches in length.

^c L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”.

^d For years when season open; some columns not averaged due to low sample sizes.

Table 4 Unit 16 wolverine harvest, 1987–2000

Year	Reported Harvest				Method of Take				Total	Successful Trappers/hunters
	Male	Female	(%)	Unk	Trap/snares	Shot	(L&S) ^a	Unk		
1987–88	0	0	--	25	0	0	--	25	25	--
1988–89	5	9	(64)	1	11	1	--	3	15	--
1989–90	7	6	(46)	0	12	1	(0)	0	13	7
1990–91	5	2	(29)	1	4	4	(0)	0	8	6
1991–92	15	5	(25)	1	14	7	(0)	0	21	11
1992–93	10	3	(23)	0	10	3	(0)	0	13	11
1993–94	8	3	(27)	1	8	4	(2)	0	12	12
1994–95	14	11	(44)	0	18	7	(0)	0	25	18
1995–96	7	2	(22)	0	7	2	(0)	0	9	7
1996–97	11	10	(48)	1	19	3	(1)	0	22	14
1997–98	6	9	(60)	1	11	5	(0)	0	16	11
1998–99	12	1	(7)	2	13	2	(0)	0	15	12
1999–00	15	13	(46)	1	20	9	(0)	0	29	20
Average ^b	10	6	(37)	1	12	4	(0)	0	17	12

^a L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”).

^b Data from 1987–88 not used in calculations.

Table 5 Unit 16 marten harvest, 1992–2000

Year ^a	Reported Harvest			Unk	Method of Take			Unk	Total	Successful Trappers/hunters
	Male	Female	(% female) ^b		Trap/snare	Shot	(L&S) ^c			
1992–93	34	11	--	85	130	0	(0)	0	130	11
1993–94	71	27	(27)	5	103	0	(0)	0	103	11
1994–95	28	22	--	47	71	0	(0)	26	97	14
1995–96	138	63	(31)	28	186	0	(0)	43	229	18
1996–97	253	149	(37)	178	570	0	(0)	10	580	34
1997–98	122	45	(27)	132	299	0	(0)	0	299	24
1998–99	261	126	(33)	171	558	0	(0)	0	558	33
1999–00	259	109	(30)	115	485	0	(0)	0	485	31
Average	146	69	(31)	95	300	0	(0)	10	310	22

^a Sealing not required until 1992–93

^b Not calculated in years when a large proportion were of unknown sex.

^c L&S (land and shoot) refers to animals recorded as “ground shot” when transportation indicated was “aircraft”).

Table 6 Unit 16 beaver harvest chronology, 1989–2000

Year ^a	Percent harvested											Harvest
	Jun–Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Unk	
1989–90	0	0	0	11	24	14	5	9	36	0	1	138
1990–91	0	0	0	4	1	9	31	22	27	0	6	176
1991–92	0	0	0	31	7	3	34	12	12	0	1	228
1992–93	0	0	0	9	5	10	17	44	11	0	3	90
1993–94	0	0	2	24	9	20	0	34	10	0	0	87
1994–95	0	0	0	11	12	0	20	27	30	0	0	66
1995–96 ^b	0	0	0	0	6	0	14	32	6	41	0	65
1996–97 ^b	2	0	5	1	4	21	13	38	7	1	7	167
1997–98	0	0	0	0	15	2	11	12	17	34	0	123
1998–99	0	0	0	14	15	2	8	23	26	11	0	115
1999–00 ^c	0	0	9	19	13	6	12	4	37	0	0	173

^a Data not collected prior to 1989

^b Season lengthened to include first 2 weeks of May

^c Season lengthened 1 month in fall.

Table 7 Unit 16 land otter harvest chronology, 1989–2000

Year ^a	Percent of Harvest								Harvest
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Unk	
1989–90	0	20	45	20	0	15	0	0	20
1990–91	0	7	7	40	13	26	7	0	15
1991–92	0	10	5	42	21	16	0	5	19
1992–93	0	0	36	21	29	7	0	7	14
1993–94	10	16	39	23	3	10	0	0	31
1994–95	0	14	0	0	57	29	0	0	7
1995–96	0	12	38	38	6	6	0	0	16
1996–97	0	11	18	4	44	22	0	0	27
1997–98	0	0	4	17	29	46	4	0	24
1998–99	0	31	30	12	12	19	0	0	18
1999–00	0	27	22	12	10	29	0	0	42

^a Data not collected before 1989

Table 8 Unit 16 wolverine harvest chronology, 1989–2000

Year ^a	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1989–90	0	0	15	8	38	31	8	0	13
1990–91	0	0	0	0	12	50	38	0	8
1991–92	5	0	5	0	57	24	10	0	21
1992–93 ^b	8	0	0	15	15	54	8	0	13
1993–94 ^b	8	8	0	25	34	8	16	0	12
1994–95 ^b	0	0	4	8	48	32	8	0	25
1995–96 ^b	0	0	0	11	22	67	0	0	9
1996–97 ^b	4	0	9	23	14	45	4	0	22
1997–98 ^b	13	0	0	19	19	31	19	0	16
1998–99 ^b	0	0	7	20	20	47	7	0	15
1999–00 ^b	3	0	3	24	14	31	24	0	29

^a Data not collected before 1989

^b Season length different for Units 16A (Nov. 10–Jan. 31) and 16B (Nov 10–Feb. 28).

Table 9 Unit 16 marten harvest chronology, 1992–2000

Year ^a	Percent of Harvest								Harvest
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Unk	
1992–93	0	0	72	26	0	2	0	0	130
1993–94	0	0	49	35	11	5	0	0	103
1994–95	0	0	47	37	0	0	0	16	97
1995–96	0	0	55	44	1	0	0	0	229
1996–97	0	0	41	51	8	0	0	0	580
1997–98	0	0	11	57	32	0	0	0	299
1998–99	0	0	26	57	18	0	0	0	558
1999–00	0	0	36	36	21	6	0	0	485

^a Sealing not required before 1992–93.

Table 10 Unit 16 beaver trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	394
1988–89	9	22	0	0	58	0	0	11	370
1989–90	12	28	0	0	57	0	1	1	145
1990–91	3	17	3	0	74	0	0	3	176
1991–92	6	2	1	0	79	0	3	9	228
1992–93	1	9	0	0	65	0	10	14	90
1993–94	1	0	0	5	77	0	7	10	87
1994–95	9	8	6	0	70	0	1	6	66
1995–96	0	0	42	0	42	0	0	17	65
1996–97	13	0	1	0	69	0	7	9	167
1997–98	9	0	44	0	35	0	7	5	123
1998–99	9	8	7	0	75	0	1	0	115
1999–00	5	20	6	0	62	0	6	0	173

Table 11 Unit 16 land otter trapper transport methods, 1987–2000

Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	51
1988–89	17	47	0	0	34	0	0	2	47
1989–90	15	55	0	0	25	0	0	5	20
1990–91	7	40	0	0	53	0	0	0	15
1991–92	0	5	0	0	90	0	0	5	19
1992–93	29	0	0	0	43	0	0	28	14
1993–94	16	0	0	16	65	0	0	3	31
1994–95	0	0	0	0	86	0	0	14	7
1995–96	19	0	0	0	44	0	0	37	16
1996–97	15	0	0	0	85	0	0	0	27
1997–98	8	4	0	0	83	0	4	0	24
1998–99	0	22	0	0	61	0	0	17	18
1999–00	0	7	5	0	86	0	2	0	42

Table 12 Unit 16 wolverine trapper transport methods, 1987–2000

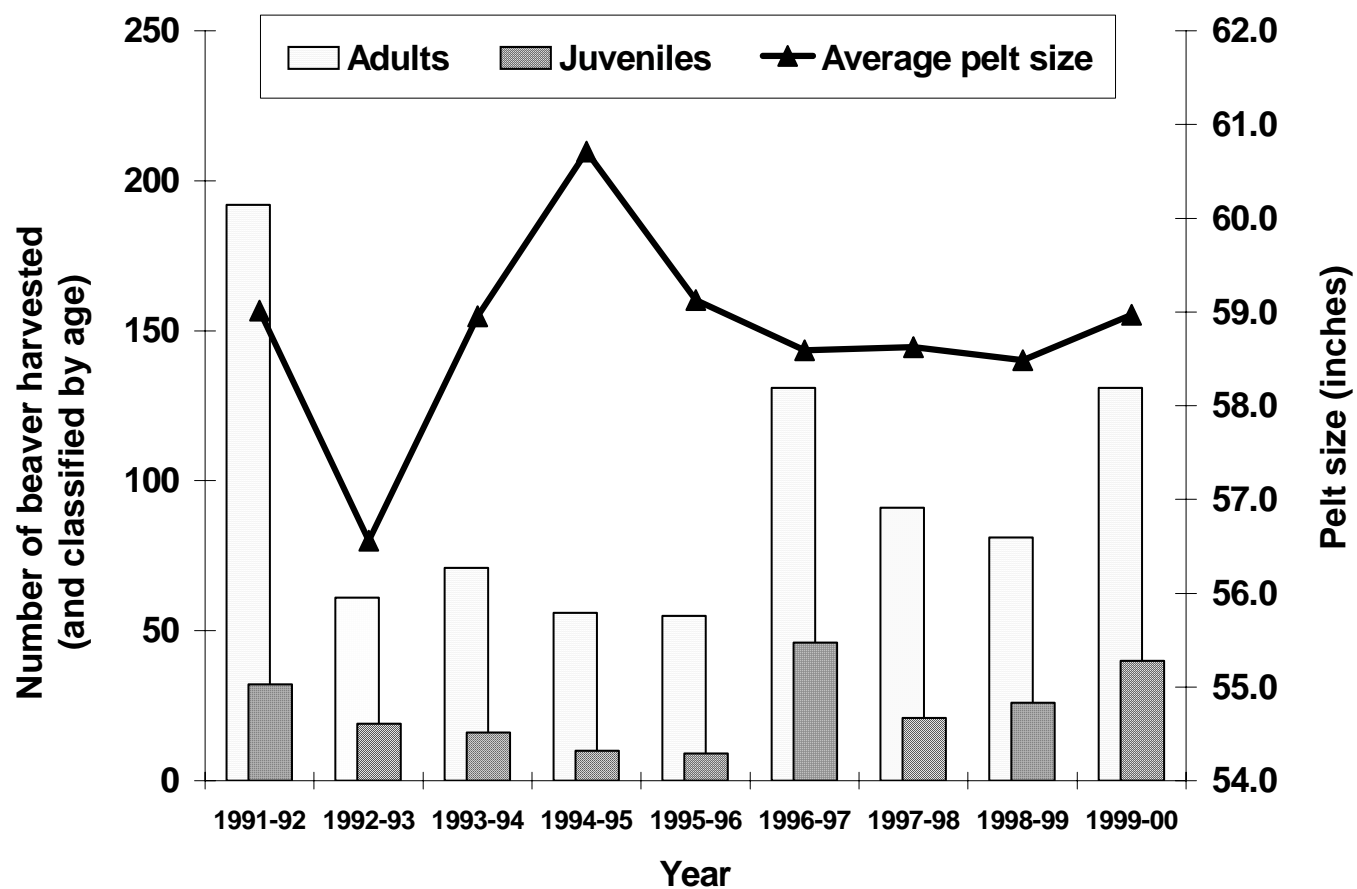
Regulatory Year	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1987–88	0	0	0	0	0	0	0	100	25
1988–89	33	13	0	0	27	0	0	27	15
1989–90	38	16	0	0	38	0	0	8	13
1990–91	50	12	0	0	38	0	0	0	8
1991–92	33	0	0	0	52	5	5	5	21
1992–93	31	0	0	0	54	0	8	8	13
1993–94	50	0	0	0	50	0	0	0	12
1994–95	24	0	0	0	60	0	0	16	25
1995–96	11	0	0	0	78	0	0	11	9
1996–97	27	0	0	0	68	4	0	0	22
1997–98	6	12	0	0	80	0	0	6	16
1998–99	13	0	0	0	87	0	0	0	15
1999–00	21	7	0	0	72	0	0	0	29

Table 13 Unit 16 marten trapper transport methods, 1992–2000

Regulatory Year ^a	Percent of Harvest								Total Harvest
	Airplane	Dogsled Skis Snowshoes	Boat	3- or 4- wheeler	Snow- machine	ORV	Highway Vehicle	Unk	
1992–93	2	6	0	8	82	0	0	2	130
1993–94	23	0	0	6	65	0	6	0	103
1994–95	23	5	0	0	33	0	6	33	97
1995–96	25	3	0	29	24	0	2	17	229
1996–97	15	1	0	0	79	0	2	2	580
1997–98	5	1	0	0	89	0	5	0	299
1998–99	2	5	0	0	80	0	2	11	558
1999–00	0	5	1	0	87	0	2	4	485

^a Sealing not required before 1992–93.

Figure 1 Unit 16 beaver harvest depicted by age group and average pelt size (length + width) across years. (Juvenile beaver measure ≤ 52 inches). Harvest numbers are incomplete due to some beaver unmeasured at time of sealing.



FURBEARER MANAGEMENT REPORT

From: 1 July 1997
To: 30 June 2000

LOCATION

GAME MANAGEMENT UNIT: 17A, B, and C (18,800 mi²)

GEOGRAPHIC DESCRIPTION: Northern Bristol Bay

BACKGROUND

Trapping has been an important part of the culture and economy of the residents of northern Bristol Bay. Trapping was one of the main sources of cash income for many local people prior to the growth of the commercial fishing industry. Until recently, large numbers of trappers from around the region would come to Dillingham to tag and sell pelts at the annual "Beaver Round-up" in March. In the past, furbuyers purchased thousands of pelts during the weeklong rendezvous and celebration. During the past decade there has been a continued decline in the importance of fur trapping to the economy and seasonal activities of local people.

Historically beaver have been the most important furbearer in Game Management Unit 17. They are abundant throughout most of unit, occurring in all major drainages and most of the smaller tributaries. Beaver dams and the resulting reservoirs enhance waterfowl nesting habitat, provide aquatic plant species used by moose and other herbivores, and are frequented by a variety of wildlife species. In some portions of the unit, beaver dams may impede the movement of migrating salmon. While the silt accumulating upstream of the dams can destroy salmon spawning habitat, the ponds may also provide good rearing habitat for different fish species. Trapping, adverse weather conditions in winter, and predation are the most significant mortality factors for beavers in Unit 17. Season closures in portions of the unit were imposed on several occasions to allow populations to recover. Bristol Bay commercial salmon prices affected beaver trapping effort in the past; as salmon prices rose, fur trapping effort declined. Pelt prices are a significant factor in the annual beaver harvest, with low fur prices contributing to the present low amount of beaver trapping activity. However, the importance of beaver as food for local residents assures a base level of harvest regardless of other factors.

Red fox are another common furbearer in Unit 17. They occur throughout the unit, preying on ptarmigan, grouse and various small mammals. Fox populations fluctuate widely, perhaps because of periodic rabies outbreaks. In the past, they have been an economically important fur species to local trappers.

Land otter populations increased steadily during the 1980s, and appeared to stabilize during the 1990s. Increases in otter fur prices resulted in trappers targeting otters rather than just catching them incidentally while trapping for beaver.

Lynx are uncommon in Unit 17. The lynx population fluctuates, but they are generally found in low-to-moderate densities even during peaks. Much of the fluctuation is probably influenced most by local hare abundance, and lynx dispersal from adjacent units. Most of the lynx harvested are caught within the Mulchatna River drainage and the mountains near Manokotak.

Wolverine occur throughout Unit 17, ranging from ridgetops to river mouths. Although no data have been collected on the wolverine population in the unit, incidental observations and trapper reports suggest it is stable. Harvest levels fluctuate annually, but have remained constant since 1976.

Marten were uncommon in most of Unit 17 prior to 1970, but recent reports suggest they are becoming more widespread. Most of their habitat occurs along the Wood-Tikchik Lake system and the spruce forests along the Nushagak and Mulchatna Rivers. Marten were reported in moderate numbers during the reporting period.

Mink occur in most of the riparian areas of Unit 17, but the size of the population and its relative trend are unknown. Pelt sizes are smaller than mink found in the Kuskokwim River drainage, and prices paid for Unit 17 mink are much lower. Consequently, there is little trapping effort targeted toward mink in this area.

Other furbearers in the unit include coyote, arctic fox, short-tailed weasels, and muskrats. Coyotes are becoming more common throughout Unit 17 as they expand their range westward from the Alaska Range. Arctic foxes are uncommon visitors to the unit, probably dispersing from the lower Kuskokwim River drainages during peaks in their population cycles. Weasels are common throughout the unit, but there is little trapping effort targeting the species. Long-term residents of unit 17 report that muskrats were common along the lower Nushagak River and Togiak Rivers, and on the Nushagak Peninsula during the first half of this century. They are currently rare throughout Unit 17, mainly occupying the Igushik and Snake River drainages.

POPULATION OBJECTIVE

Beaver: To maintain beaver populations in Unit 17A at an average stream density index of 1.0 cache per river mile. To maintain beaver populations throughout Units 17B and 17C at a level sufficient to sustain an average stream density of 1.2 caches per river mile.

Otter: To maintain a population of land otters in Unit 17 capable of sustaining an average annual harvest of 200 otters.

Red Fox: To maintain a population of red foxes in Unit 17 capable of sustaining a 5-year average annual harvest of 400 foxes.

Wolverine: To maintain a population of wolverines in Unit 17 capable of sustaining an average annual harvest of 50 wolverines.

METHODS

Harvest data were collected when beavers, wolverines, lynx, and otters were presented for sealing. Fur acquisition reports provided additional harvest data for those species not required to be sealed. A trapper questionnaire designed to provide an index of population status of various furbearer species was sent to a sample of trappers throughout the unit each spring. Aerial cache surveys were flown most years between 1968 and 2000 to provide an index of abundance in selected streams and rivers.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Beaver populations in the unit appeared to be stable to increasing during this reporting period. Most residents report high beaver densities throughout the area, but low fur prices kept harvests low during this reporting period. Reports of nuisance beavers, particularly on salmon spawning streams and along roads, have remained constant over the past several years.

Otter and wolverine populations appeared to be stable. Both species occur throughout the unit. No objective population data have been collected on these species in Unit 17.

Although never common in the unit, lynx populations appeared to increase in the early 1990s. Population data for lynx are derived from incidental observations and harvest records. Snowshoe hare populations appeared to be moderate in Units 17B and 17C during this reporting period.

Red fox populations were stable to increasing during this reporting period though trends are difficult to determine because of low trapping effort. Ptarmigan and microtine populations were at moderate levels and appeared to be stable.

Coyotes were becoming more common in the unit, as their numbers and range continued to increase. Highest densities were along the lower Nushagak River.

No data were available to assess marten, mink or weasel population trends. Trapper reports indicate that these species are common in suitable habitat and that marten populations have expanded their range in recent years.

Muskrats remained scarce throughout the unit during this reporting period.

In spite of intensive human use of area waterways, observations of muskrats are rare. The only portions of the unit with viable populations appeared to be the Weary and Igushik River drainages.

MORTALITY

Harvest

Season and Bag Limit.

Beaver season was open from November 10 through February 28 during the 1997–1998 and 1998–1999 regulatory years. Beginning in the 1999–2000 regulatory year, beaver season was open November 10 through March 31, and from April 15 through May 31 firearms could be used to take up to 2 beaver per day for food. The season bag limit was 40 beavers per trapper.

Marten, mink, weasel, and wolverine seasons were open from November 10 through February 28. There was no bag limit on these animals. Wolverine could also be taken during the September 1 through March 31 hunting season. There is a bag limit of one wolverine per season if taken on a hunting license.

Coyote, arctic fox, red fox, and lynx seasons were open from November 10 through March 31. There was no bag limit on these animals.

Land otter season was open from November 10 through February 28 for the 1997–1998 and 1998–1999 regulatory years. Beginning with the 1999–2000 regulatory year, otter trapping season was November 10 through March 31. There was no limit on otters.

Muskrat season was open from November 10 to February 28, with a bag limit of 2 muskrats per season.

Board of Game Actions and Emergency Orders. During their spring 1999 meeting, the Board of Game extended the beaver trapping season through March 31 to provide additional beaver trapping opportunity. Otter season was also extended because of the possibility of catching otters while beaver trapping. No Emergency Orders affecting trapping were issued during this reporting period.

Human-Induced Mortality. Beaver harvests during this reporting period were 382 in 1997–1998; 436 in 1998–1999; and 215 in 1999–2000, all dramatically lower than the mean annual harvest for the previous 5 years (1992/93–1996/97, $\bar{x} = 706$) (Table 1). Trappers indicated that the main reasons for the reduced harvest were low prices and unfavorable weather conditions during the trapping season. The number of trappers afield was also affected by these factors (Table 2). The percentage of kits in the harvest remained consistent until the 1999–2000 season in spite of dramatic fluctuations in the number of beavers harvested (Table 1). The high proportion of kits in the 1999–2000 season is probably more a reflection of the low harvest rather than any change in the beaver population. Snares and conibear traps are equally important methods of trapping beavers in Unit 17 in recent years (Table 2).

The number of lynx caught this reporting period remained stable, with 14 reported in 1997–1998; 9 in 1998–1999; and 12 in 1999–2000. The average annual harvest from the previous 5 years (1992–1993 through 1996–1997) was 14 lynx (Table 1). Most lynx caught in the past 5 years have been taken by a trap or snare (Table 3).

Otter harvests during this reporting period declined from the previous reporting period and is probably related to the decrease in beaver trapping effort. Reported harvests were 86 in 1997–1998, 50 in 1998–1999 and 42 in 1999–2000. These harvests were lower than the average annual harvest of 118 for the previous 5 years (1992/93–1996/97) (Table 1). During the past 5 years the sex ratio of the harvest remained even (Table 4). Traps (probably conibears) are the most common method used by successful trappers, followed by snares and firearms (Table 4).

Wolverine harvests during this reporting period generally declined from the previous reporting period. Reported harvests were 47 in 1997–1998, 27 in 1998–1999 and 30 in 1999–2000. Wolverine harvests averaged 35 per year during this reporting period, similar to the average annual harvest of 36 during the previous 5 years (1992/93–96/97) (Table 1). Traps were the most common method of harvest, followed by firearms and snares (Table 5).

Harvest data on furbearers that are not sealed are sketchy at best. Fur export and acquisition reports provide only minimum harvest levels because many furs are used locally during periods of low fur prices.

Permit Hunts. Permits for trapping nuisance beavers were issued each fall during this reporting period, to remove beaver that were damming a culvert on the road to the local hospital.

Hunter Residency and Success. Data on trapper residency and success have not been specifically analyzed. Most of the furbearers trapped in Unit 17 are taken by local residents. Individuals from villages within the unit account for most of the harvest. Trappers residing in adjacent units (Nondalton, Iliamna, and Kuskokwim River villages) also take some furbearers in Unit 17. A few trappers from outside of the area have flown into Unit 17B to harvest wolverine. Several wolverine were taken by nonresidents using their nonresident hunting license and big game tags during the fall while hunting for moose or caribou.

Transport Methods. Snowmachines were the most common means of access used by successful trappers in Unit 17 (Tables 6–9). During most years snowmachines allow reliable access to most of the unit from late December to March.

Harvest Chronology. Beaver harvest chronology is dependent on weather conditions. Fluctuations noted on Table 10 should be viewed with caution. Many trappers did not keep close track of when individual beavers were trapped during the course of the season. Most lynx harvested during this reporting period were taken in January or February (Table 11). Otters were caught throughout the trapping season with the majority of the harvest occurring during the period when most of the beaver trapping occurs (January and February) (Table 12). Wolverine harvests were highest in February during most years (Table 13).

OTHER MORTALITY

Beaver, and occasionally otter, are sometimes caught in gill nets during the summer fishing season. The total number caught unitwide is probably less than 50 per year. These incidental catches are rarely reported and carcasses are either used for food or discarded.

Natural mortality of beavers can be high in the Bristol Bay area during winters of low temperatures and low snowfall, when beaver caches in shallow areas become ice-bound. Beaver mortality rates can be high along major rivers during severe spring break-up periods

There were no reported cases of rabid foxes in Unit 17 during this reporting period.

HABITAT

Assessment

No formal habitat monitoring programs were conducted in Unit 17. Furbearer habitat along the Nushagak and Mulchatna Rivers, and along the lower reaches of the major tributaries to those rivers, appeared to be in very good-to-excellent condition. Although there was evidence of heavy browsing, willow stands on gravel bars were abundant.

Enhancement

No man-caused habitat enhancement activities have been documented in Unit 17. Because the unit is mostly inaccessible and natural enhancement is ongoing, man-caused habitat enhancement is not practical or necessary at this time.

NONREGULATORY PROBLEMS/NEEDS:

Commercial Fisheries biologists reported conflicts with beaver activity and spawning salmon along streams throughout the unit (J. Browning, ADF&G, pers. comm.).

CONCLUSIONS

Most furbearer populations in Unit 17 appear to be healthy and stable. Low prices paid for pelts, coupled with high fuel prices have reduced trapping pressure on beavers and otters in many areas. Local trappers are generally satisfied with current beaver and otter seasons and bag limits.

Wolverine harvests have been consistent for the past several years and populations seemed to be stable. Prohibition of same-day airborne hunting and elimination of the March portion of the trapping season have not reduced the harvest. Most wolverine pelts are used by local fur sewers and prices have remained consistently high in spite of lower prices for wolverine outside of the local area.

Lynx populations have rebounded from the low levels first noted in 1987–1988 and peaked in 1994–1995. Liberal seasons have probably had little effect on the recovery of the lynx population because most trappers in the unit catch lynx incidentally in marten sets.

Red fox populations remained stable during this reporting period. If the fox population cycle is driven by periodic endemic rabies outbreaks, there are probably few practical measures the department can implement to achieve the objective of maintaining a population that will support a harvest of 400 foxes per year.

Reasons for the low muskrat population in Unit 17 remain a mystery. However, this seems to be a statewide phenomenon. More research into the historic abundance and distribution of this species in the Bristol Bay area is needed.

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Please cite any information taken from this section, and reference as:

Woolington, J. D. 2001. Unit 17 furbearer management report. Pages 217–233 *in* C. Healy, editor. Furbearer management report of survey and inventory activities 1 July 1997–30 June 2000. Alaska Department of Fish and Game. Project 7.0. Juneau, Alaska.

Table 1 Reported harvest of furbearers in Unit 17, 1956–5 through 1999–00 (sealing record data)

Regulatory year	Beaver		Lynx		Land Otter				Wolverine			
	% Kits	Total	% Kits	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1956–57	22.9	367	---	---	---	---	---	---	---	---	---	---
1957–58	19.1	3165	---	---	---	---	---	---	---	---	---	---
1958–59	19.6	3245	---	---	---	---	---	---	---	---	---	---
1959–60	24.3	3721	---	---	---	---	---	---	---	---	---	---
1960–61	23.1	2849	---	---	---	---	---	---	---	---	---	---
1961–62	29.5	1903	---	---	---	---	---	---	---	---	---	---
1962–63	23.3	2172	---	---	---	---	---	---	---	---	---	---
1963–64	28.4	1766	---	---	---	---	---	---	---	---	---	---
1964–65	22.1	957	---	---	---	---	---	---	---	---	---	---
1965–66	25.2	1424	---	---	---	---	---	---	---	---	---	---
1966–67	25.3	2711	---	---	---	---	---	---	---	---	---	---
1967–68	25.7	3158	---	---	---	---	---	---	---	---	---	---
1968–69	N/A	1750 ^a	---	---	---	---	---	---	---	---	---	---
1970–71	27.5	824	---	---	---	---	---	---	---	---	---	---
1971–72	20.5	762	---	---	---	---	---	---	---	---	---	---
1972–73	23.9	1849	---	---	---	---	---	---	10	5	6	21
1973–74	23.9	1681	---	---	---	---	---	---	27	18	0	45
1974–75	15.8	929 ^b	---	---	---	---	---	---	14	7	1	22
1975–76	22.2	637 ^b	---	---	---	---	---	---	50	25	3	78
1976–77	17.7	766 ^b	---	---	---	---	---	---	37	12	2	51
1977–78	23.5	802 ^b	11.1	36	52	49	7	108	32	14	3	49
1978–79	20.5	959	26.7	30	70	54	9	133	26	14	3	43
1979–80	27.7	1478	32.0	25	68	62	9	140	28	19	0	47
1981–82	20.9	1693	11.8	17	94	83	1	179	28	10	0	38
1982–83	12.8	1824	12.0	25	100	72	31	204	34	17	1	52
1983–84	18.7	1360	8.3	12	94	63	3	165	10	4	0	14
1984–85	22.9	1661	27.6	29	105	94	20	219	39	16	2	57

Table 1 Continued

Regulatory Year	Beaver		Lynx		Land Otter				Wolverine			
	% Kits	Total	% Kits	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1985–86	15.9	1452	12.5	8	49	46	6	101	13	8	2	23
1986–87	20.1	2817	21.4	14	87	90	11	188	31	9	0	40
1987–88	21.8	3048	---	1	133	133	1	267	22	20	2	44
1988–89	18.8	965	---	1	66	57	19	142	21	16	7	44
1989–90	19.7	1245	---	1	67	46	3	116	14	7	5	26
1990–91	20.2	1092	50.0	2	68	71	10	149	19	19	8	46
1991–92	21.8	1183	---	5	40	45	18	103	25	23	3	51
1992–93	29.9	455	13.3	15	38	36	9	83	8	2	0	10
1993–94	20.0	676 ^c	13.3	15	46	40	10	96	18	10	1	29
1994–95	23.3	1091	14.3	28	63	50	21	134	32	21	5	58
1995–96	26.2	439	---	7	43	40	0	83	22	12	0	34
1996–97	20.0	869	14.3	7	75	95	24	194	28	14	8	50
1997–98	24.4	382	21.4	14	40	43	3	86	29	18	0	47
1998–99	27.5	436	11.1	9	23	22	5	50	20	6	1	27
1999–00 ^d	43.7	215	---	12	14	18	10	42	21	9	0	30

^a No harvest records available, estimates only

^b Beaver trapping season closed in units 17A and 17C.

^c Beaver trapping season in unit 17A extended by one month by emergency regulation.

^d Beaver trapping season changed to November 10–March 31 unit-wide.

Table 2 Unit 17 beaver harvest, 1992–93 through 1999–00

Regulatory year ^a	Reported harvest			Method of take			Successful Trappers
	Kits ^b (%)	Adults (%)	Total	Trap (%)	Snare (%)	Unk.	
1992–93	136 (29.9)	319 (70.1)	455	218 (47.9)	213 (46.8)	24	45
1993–94	135 (20.0)	541 (80.0)	676	345 (51.0)	320 (47.3)	11	57
1994–95	254 (23.3)	837 (76.7)	1091	564 (51.7)	517 (47.4)	10	90
1995–96	115 (26.2)	324 (73.8)	439	244 (55.6)	195 (44.4)	0	44
1996–97	174 (20.0)	695 (80.0)	869	311 (35.8)	558 (64.2)	0	65
1997–98	90 (24.4)	289 (75.6)	382	177 (46.3)	179 (46.9)	26	38
1998–99	120 (27.5)	316 (72.5)	436	187 (42.9)	212 (48.6)	37	43
1999–00	94 (43.7)	121 (56.3)	215	98 (45.6)	108 (50.2)	9	25

^a In 1993–94 the Unit 17A season was extended to Feb. 28 by emergency regulation.

^b juveniles < 52"

Season dates:	1992/93–1996/97	Unit 17A	Jan. 1–Jan. 31: 20 per season
		Units 17B & C	Jan. 1–Feb. 28: 20 per season
	1999/00	Unit 17	Nov. 10–Mar. 31: 20 per season
			April 15–May 31: 2 beaver/day can be taken with a firearm.

Table 3 Unit 17 lynx harvest, 1992–93 through 1999–00

Regulatory year ^a	Reported harvest						Method of take			Successful Trappers
	Males (%)	Females (%)	Unk.	Juveniles ^b (%)	Adults (%)	Total	Trap/Snare (%)	Shot (%)	Unk.	
1992–93	5 (33.3)	4 (26.7)	6	2 (13.3)	13 (86.7)	15	13 (86.7)	2 (13.3)	0	4
1993–94	5 (33.3)	7 (46.7)	3	2 (13.3)	13 (86.7)	15	14 (93.3)	1 (6.7)	0	11
1994–95	10 (35.7)	15 (53.6)	3	4 (14.3)	24 (85.7)	28	28 (100)	0 (---)	0	14
1995–96	2 (28.6)	5 (71.4)	0	0 (---)	7 (100)	7	6 (85.7)	1 (14.3)	0	6
1996–97	1 (14.3)	4 (57.1)	2	1 (14.3)	5 (71.4)	7	6 (85.7)	0 (---)	1	7
1997–98	8 (57.1)	6 (42.9)	0	3 (21.4)	11 (78.6)	14	9 (64.3)	5 (35.7)	0	9
1998–99	3 (33.3)	4 (44.4)	2	1 (11.1)	8 (88.9)	9	9 (100)	0 (---)	0	7
1999–00	3 (25.0)	8 (66.7)	1	0 (---)	12 (100)	12	11 (91.7)	1 (8.3)	0	4

^a Trapping season dates: 1992/93–1996/97 Unit 17 Nov. 10–Feb. 28 No limit
1 1997/98–1999/00 Unit 17 Nov. 10–Mar. 31 No Limit
Hunting season dates: 1992/93–1999/00 Unit 17 Nov. 10–Feb. 28 2 lynx

^b juveniles < 34" in length

Table 5 Unit 17 wolverine harvest, 1992–93 through 1999–00

Regulatory Year ^a	Reported harvest				Method of take				Successful Trappers
	Males (%)	Females (%)	Unk.	Total	Trap (%)	Snare (%)	Shot (%)	Unk.	
1992–93	8 (80.0)	2 (20.0)	0	10	8 (80.0)	0 (---)	2 (20.0)	0	10
1993–94	18 (62.1)	10 (34.5)	1	29	7 (24.1)	1 (3.4)	21 (72.4)	0	20
1994–95	32 (55.2)	21 (36.2)	5	58	44 (75.9)	1 (1.7)	13 (22.4)	0	29
1995–96	22 (64.7)	12 (35.3)	0	34	25 (73.5)	1 (2.9)	8 (23.5)	0	17
1996–97	28 (56.0)	14 (28.0)	8	50	36 (72.0)	1 (2.0)	13 (26.0)	0	24
1997–98	29 (61.7)	18 (38.3)	0	47	37 (78.7)	0 (---)	10 (21.3)	0	18
1998–99	20 (74.1)	6 (22.2)	1	27	15 (55.6)	1 (37.0)	10 (37.0)	1	27
1999–00	21 (70.0)	9 (30.0)	0	30	13 (43.3)	0 (---)	17 (56.7)	0	22
^a Trapping season dates:		1992/93–1996/97		Unit 17	Nov. 10–Feb. 28		No limit		
Hunting season dates:		1992/93–1996/97		Unit 17	Sep. 1–Mar. 31		1 wolverine		

Table 6 Unit 17 beaver harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Percent of harvest							Unknown	Total
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1992–93	---	---	---	---	96.3	---	---	3.7	455
1993–94	1.3	---	---	---	96.4	---	---	2.2	676
1994–95	0.4	1.3	---	---	98.2	---	0.2	---	1091
1995–96	0.9	2.7	---	---	96.4	---	---	---	439
1996–97	1.5	---	---	---	98.4	0.1	---	---	869
1997–98	---	---	---	6.3	84.0	---	1.8	6.8	382
1998–99	0.5	2.3	---	---	88.8	---	---	8.5	436
1999–00	0.5	---	0.5	---	93.0	---	---	6.0	215

Table 7 Unit 17 lynx harvest percent by transport method, 1992–93 through 1999–00

Regulatory year	Percent of harvest							Unknown	Total
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1992–93	---	---	---	---	100.0	---	---	---	15
1993–94	---	---	6.7	---	80.0	---	---	13.3	15
1994–95	3.6	---	---	---	96.4	---	---	---	28
1995–96	42.9	---	---	---	57.1	---	---	---	7
1996–97	---	---	---	---	85.7	---	---	14.3	7
1997–98	---	---	---	7.1	64.3	---	---	28.6	14
1998–99	---	---	22.2	---	77.8	---	---	---	9
1999–00	---	---	---	---	100	---	---	---	12

Table 8 Unit 17 otter harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Percent of harvest							Unknown	Total
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1992–93	---	---	6.0	---	91.6	---	---	2.4	83
1993–94	---	---	10.4	---	80.2	---	---	9.4	96
1994–95	---	---	---	---	99.3	---	---	0.7	134
1995–96	---	---	---	---	86.7	---	1.2	12.0	83
1996–97	---	---	---	---	94.8	---	---	5.2	194
1997–98	---	---	---	7.0	93.0	---	---	---	86
1998–99	---	---	---	---	100	---	---	---	50
1999–00	---	---	16.7	---	50.0	---	---	33.3	42

Table 9 Unit 17 wolverine harvest percentage by transport method, 1992–93 through 1999–00

Regulatory year	Percent of harvest							Unknown	Total
	Airplane	Dogsled	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle		
1992–93	---	---	---	---	100.0	---	---	---	10
1993–94	17.2	---	---	---	79.3	---	---	3.4	29
1994–95	13.8	---	---	---	86.2	---	---	---	58
1995–96	52.9	---	---	---	41.2	---	---	5.9	34
1996–97	38.0	---	---	---	62.0	---	---	---	50
1997–98	46.8	---	---	---	51.1	---	---	2.1	47
1998–99	37.0	---	---	---	55.6	---	---	7.4	27
1999–00	16.7	---	6.7	---	73.3	---	---	3.3	30

Table 10 Unit 17 beaver harvest chronology percentage by month, 1992–93 through 1999–00

Regulatory Year	Month						Other/Unk	Total
	November	December	January	February	March	April		
1992–93	---	---	71.2	27.9	---	---	0.9	455
1993–94	---	---	45.4	51.6	---	---	3.0	676
1994–95	---	---	43.9	51.6	3.0	---	1.5	1091
1995–96	---	0.5	43.3	56.0	---	---	0.2	439
1996–97	---	0.1	55.5	44.4	---	---	---	869
1997–98	1.1	15.2	54.2	27.0	1.6	---	---	382
1998–99	10.1	18.8	40.4	24.3	---	---	6.4	436
1999–00	5.1	5.6	70.2	13.0	4.2	---	1.9	215

Table 11 Unit 17 lynx harvest chronology percentage by month, 1992–93 through 1999–00

Regulatory year	Month						Other/Unknown	Total
	November	December	January	February	March			
1992–93	13.3	46.7	---	40.0	---	---	---	15
1993–94	8.3	33.3	13.3	53.3	---	---	---	15
1994–95	---	25.0	35.7	35.7	3.6	---	---	28
1995–96	---	28.6	57.1	14.3	---	---	---	7
1996–97	---	14.3	28.6	42.9	---	---	14.3	7
1997–98	---	21.4	35.7	7.1	---	---	35.7	14
1998–99	11.1	11.1	11.1	44.4	11.1	---	11.1	9
1999–00	---	8.3	66.7	16.7	8.3	---	---	12

Table 12 Unit 17 otter harvest chronology percent by month, 1992–93 through 1999–00

Regulatory year	Month						Total
	November	December	January	February	March	Other/Unknown	
1992–93	8.4	10.8	59.0	20.5	---	1.2	83
1993–94	14.6	24.0	34.4	18.8	1.0	7.3	96
1994–95	5.2	18.7	47.0	24.6	3.0	1.4	134
1995–96	1.2	10.8	32.5	55.4	---	---	83
1996–97	1.0	2.6	46.9	43.3	3.6	2.6	194
1997–98	3.5	29.1	39.5	26.7	---	1.2	86
1998–99	10.0	14.0	36.0	38.0	---	2.0	50
1999–00	4.8	9.5	35.7	19.1	7.1	23.8	42

Table 13 Unit 17 wolverine harvest chronology percentage by month, 1992–93 through 1999–00

Regulatory year	Month						Total
	November	December	January	February	March	Other/Unknown	
1992–93	---	10.0	40.0	50.0	---	---	10
1993–94	---	10.3	13.8	51.7	3.4	20.7	29
1994–95	---	13.8	36.2	41.4	5.2	3.4	58
1995–96	14.7	8.8	20.6	38.2	---	17.6	34
1996–97	---	20.0	42.0	28.0	8.0	2.0	50
1997–98	---	6.4	51.1	38.3	---	4.3	47
1998–99	---	11.1	29.6	40.7	---	18.5	27
1999–00	3.3	10.0	20.0	36.7	10.0	20.0	30